

Class 317

Electric Multiple Unit

Volume 2



Contents

How to Install.....	2
Technical Information.....	3
Liveries.....	4
Cab Guide.....	16
Keyboard Controls.....	18
Features.....	19
Cab Variants.....	19
Passenger View.....	20
Pantographs.....	23
Player Changeable Destination Blind.....	24
Digital Destination Display.....	25
Cab Secure Radio (CSR).....	26
Global System for Mobile Communication-Railway (GSM-R).....	28
Driver Only Operation (DOO).....	30
Adhesion.....	31
Gradients.....	32
Neutral Section Functionality.....	33
Isolation Switches.....	33
Arcing Pantograph.....	34
Variable Power & Brake Performance.....	35
Variable Traction Motor Volume.....	35
Thrash Mode.....	35
Coupling Procedure.....	35
AI Horns.....	36
Cold Start.....	39
Bits and Bobs.....	40
Setting up the Driver's Cab.....	41
Driving Guide.....	41
How to Use in the Scenario Editor.....	42
Numbering.....	42
Scenarios.....	45
Credits.....	46

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 317 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.
- 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.

Technical Information

Manufacturer	British Rail Engineering Limited (BREL) York
Years built	1981 - 1987
Number built	24 (317649 - 317672) & 9 317/7s
Traction motors	4 x GEC G315BZ
Maximum speed	100 mph (161 km/h)
Coupling type	Tightlock
Length	19.83m per car
Height	3.7 m
Width	2.82 m
Weight	137 t

Liveries

Class 317/2

BR Blue/Grey:

with BR logo - *BR*

with NSE logo - *Ex-BR (NSE) 1*

with NSE logo and front NSE flash - *Ex-BR (NSE) 2*



Network SouthEast:

with original front numbers - *NSE 1*

with revised front numbers - *NSE 2*

with BR logo - *NSE (BR) 1*

with BR logo and front NSE flash - *NSE (BR) 2*

with Great Northern Line door logo and original front numbers - *NSE (GN) 1*

with Great Northern Line door logo and revised front numbers - *NSE (GN) 2*

with NSE & WAGN logo - *NSE (WAGN)*

without logo - *Ex-NSE*

with WAGN logo - *Ex-NSE (WAGN)*



WAGN:

with logo - *WAGN*

without logo - *Ex-WAGN*



Ex-WAGN (National Express East Anglia) - *Ex-WAGN (NXEA)*



ONE



Ex-ONE



Ex-ONE (National Express East Anglia) - Ex-ONE (NXEA)



ONE Dark



National Express East Anglia:

with National Express logo - *NXEA*

without logo - *Ex-NXEA*

with Greater Anglia logo - *Ex-NXEA (GA)*

with Abellio Greater Anglia logo - *Ex-NXEA (AGA)*

with revised Greater Anglia logo - *Ex-NXEA (GA2)*



Greater Anglia 1:

with Greater Anglia logo - *GA1*

with Abellio Greater Anglia logo - *AGA1*

with revised Greater Anglia logo - *GA2 1*

without logo - *Ex-GA1*



Greater Anglia 2:

with Abellio Greater Anglia logo - AGA2

with revised Greater Anglia logo - GA2 2

without logo - *Ex-GA2*



Class 317/7

Stansted Express:

with logo - *STX*

without logo - *Ex-STX*



Stansted Express (National Express East Anglia) - *STX (NXEA)*



ONE Stansted Express - *ONE STX*



Ex-ONE Stansted Express (National Express East Anglia) - *Ex-ONE STX (NXEA)*



National Express East Anglia (Stansted Express):

with Stansted Express logo - *NXEA (STX)*

without Stansted Express logo - *Ex-NXEA1*

without Stansted Express & National Express logos - *Ex-NXEA2*



Ex-Greater Anglia - *Ex-GA*



London Overground:

without logo - *Ex-LO*

with Greater Anglia logo - *Ex-LO (GA)*



Cab Guide

Driver's Side



- | | |
|---|---|
| 1 - Brake handle | 15 - Car slider |
| 2 - Windscreen wiper switch | 16 - Driver to guard bell |
| 3 - Marker lights switch | 17 - Horn |
| 4 - Tail lights switch | 18 - Emergency Bypass Switch (EBS) |
| 5 - Headlight switch | 19 - Line light indicator |
| 6 - Cab lights switch | 20 - Door release buttons (right) |
| 7 - Driver's Reminder Appliance (DRA) | 21 - Sander button (modern cab only) |
| 8 - Door release buttons (left) | 22 - Vacuum Circuit Breaker (VCB) indicator |
| 9 - Pantograph up/reset button | 23 - Couple button |
| 10 - Pantograph down button | 24 - Uncouple button |
| 11 - AWS reset button | 25 - Master key/reverser |
| 12 - Train Protection Warning System (TPWS) | 26 - Power handle |
| 13 - Main reservoir & brake cylinder gauge | 27 - AWS sunflower |
| 14 - Speedometer | |

Non-driver's Side & Back Wall



- 28 - AWS Isolating Switch (AWS)
- 29 - Non-driver's side wiper switch
- 30 - Headlamp MCB
- 31 - Door control MCB
- 32 - Compressor control MCB
- 33 - Saloon lighting set button
- 34 - Saloon lighting trip button
- 35 - Auxiliaries set button

- 36 - Auxiliaries trip button
- 37 - Gangway lighting switch
- 38 - Vestibule lighting switch
- 39 - Traction Interlock Switch (TIS)
- 40 - Cab heating switch
- 41 - Vestibule heating switch
- 42 - Door key switch off/on
- 43 - Door key switch

Keyboard Controls

Non-standard keyboard controls are listed below:

Z -	Auxiliaries set button
Ctrl+Z -	Auxiliaries trip button
L -	Cab lights switch ON/OFF
F7 -	Destination blind/display UP
F8 -	Destination blind/display DOWN
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
H -	Headlight switch ON/OFF
Space -	Horn (low tone)
B -	Horn (high tone)
J -	Marker lights switch ON/OFF
Shift+W -	Master key IN/OUT
Shift+P -	Pantograph down button
P -	Pantograph up/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+T -	Thrash mode ON/OFF
Ctrl+Numpad Enter -	Visual aids ON/OFF
Shift+V -	Driver's windscreen wiper switch LEFT
V -	Driver's windscreen wiper switch RIGHT

Features

Cab Variants

To represent the main changes that have occurred throughout the last 40 years, 2 cab variants are provided.

Original



Modern



Passenger View

A passenger view in the MSO is provided in a variety of seat moquettes. On modern liveries, it also features a functioning passenger information system (PIS) which displays the time and the destination of the train.

Class 317/2

BR Blue/Grey



Network SouthEast



WAGN



Greater Anglia



Class 317/7
Stansted Express

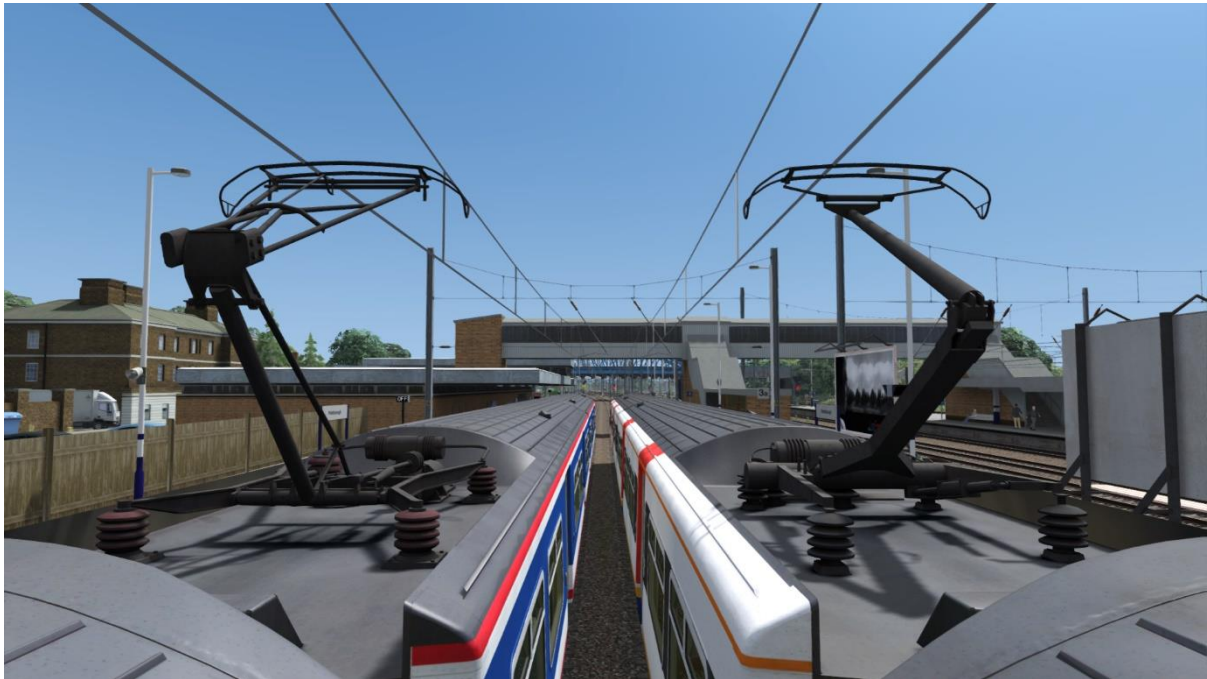


London Overground



Pantographs

Class 317/2s were built with Stone Faiveley AMBR pantographs but in the late 1990s, WAGN fitted the newer Brecknell Willis high speed pantograph as part of their refurbishment programme. 317/7s also received this newer pantograph when they were refurbished. Both of these types are provided and are automatically applied on each unit as per reality.



Left - Stone Faiveley AMBR

Right - Brecknell Willis high speed

Player Changeable Destination Blind

The destination blind can be changed during a scenario by pressing either **F7** or **F8**. 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 - Blank	s - Gordon Hill	K - Pitsea
b - Sorry - Not in Service	t - Enfield Town	L - Romford
c - Special	u - Hertford	M - Royston
d - Bedford	v - Hitchin	N - Rugby
e - Birmingham	w - Huntingdon	O - Shoeburyness
f - Bishops Stortford	x - Ipswich	P - Southend Central
g - Bletchley	y - Kings Cross	Q - St. Albans
h - Braintree	z - Kings Cross via Hertford	R - St. Pancras
i - Broxbourne	A - Kings Lynn	S - Stansted Airport
j - Cambridge	B - Letchworth	T - Stevenage
k - Cheshunt	C - Liverpool Street	U - Stevenage via Hertford
l - Chingford	D - London Euston	V - Stratford
m - Colchester	E - Luton	W - Tring
n - Coventry	F - Milton Keynes	X - Upminster
o - Cricklewood	G - Moorgate	Y - Welwyn G.C.
p - Ely	H - Northampton	Z - Witham
q - Fenchurch Street	I - Norwich	
r - Finsbury Park	J - Peterborough	

Digital Destination Display



In the mid-2000s, a digital passenger information system (PIS) was fitted which can be controlled via the computer located above the windscreen. Instructions for this system can be found below:

- 1) Press the **ESC** button.
- 2) Input the 5-digit destination code using the numpad.
- 3) Press the **OK** button.

This display can also be controlled by pressing **F7** or **F8**.

Please see below for a list of the available destinations and their relevant code. The numerical code is what you need to input into the computer and the letter is if you wish to control the destination via the unit's number on an AI service:

00000/a - Blank	00217/q - Enfield Town	00233/G - Norwich
00202/b - Audley End	00218/r - Harlow Mill	00234/H - Peterborough
00203/c - Baldock	00219/s - Harlow Town	00235/I - Romford
00204/d - Bedford	00220/t - Hertford East	00236/J - Royston
00205/e - Bishops Stortford	00221/u - Hertford North	00237/K - Seven Sisters
00206/f - Braintree	00222/v - Hitchin	00238/L - Special
00207/g - Broxbourne	00223/w - Huntingdon	00239/M - St. Albans
00208/h - Cambridge	00224/x - Ipswich	00240/N - Stansted Airport
00209/i - Cambridge North	00225/y - King's Cross via Hertford	00241/O - Stevenage
00210/j - Chelmsford	00226/z - Kings Lynn	00242/P - Stevenage via Hertford
00211/k - Cheshunt	00227/A - Letchworth	00243/Q - Stratford
00212/l - Chingford	00228/B - London King's Cross	00244/R - Tottenham Hale
00213/m - Colchester	00229/C - London Liverpool Street	00245/S - Upminster
00214/n - Cricklewood	00230/D - Moorgate	00246/T - Ware
00215/o - Ely	00231/E - St. Pancras	00247/U - Welwyn G.C.
00216/p - Finsbury Park	00232/F - Luton	00248/V - Witham

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.

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.

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 turning the door key switch on the back wall and then pressing **Ctrl+R**. This 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. To increase adhesion, you may use the sander for a maximum of 10 seconds whilst powering.

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 317 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 included scenarios with this pack. These have been placed using our own markers and signage which are available in the 'AP/Common' object set filter folder.

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 the EBS or AWS, you must first insert a master key into the corresponding lock and click the relevant flag. To activate the TIS, you only need to click the switch on the back wall. Please see below for a list of what each flag does:

- **AWS (AWS Isolating Switch)** - Non-driver's side - disables the AWS (Automatic Warning System).
- **EBS (Emergency Bypass Switch)** - Driver's side - disables emergency brake.
- **TIS (Traction Interlock Switch)** - Back wall - disables the traction interlock so you can obtain power without door interlock.

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.

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 317s 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 cannot 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**.

Coupling Procedure

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

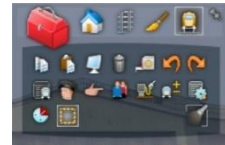
- 1) Approach the unit you are going to couple to at caution and come to a stop just short of it.
- 2) Select 'Notch 1' power and ease up to the unit. As soon as you have coupled, apply 'Step 3' brake and return the power handle to 'Off'.
- 3) To ensure the coupling is secure, you must perform a 'pull-away' 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.

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:

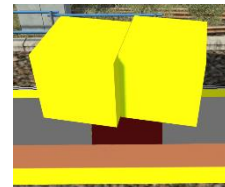
- 1) In the scenario editor, go to the location at which you would like the AI train's horn to sound, and press **Spacebar** 3 times. The track will now display a certain colour which represent its speed limit.

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

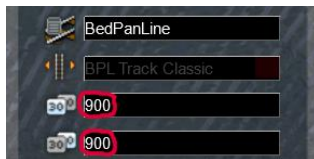


- 3) Hover your mouse over the piece of track where you like the AI horn to sound. A yellow border will appear around the track when it is selected.

- 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.

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 the 'Pantograph Up' button. 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 'Pantograph Up' button. Once 5 bar has been reached, press 'Pantograph Up' button and the pantograph will raise. Power will be fed to the train and you will hear the main compressor activate.
- 6) 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.
- 7) 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.

Bits and Bobs

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

- Nameplates included for 317654, 317709 & 317723.
- 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.
- 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 only provide illumination before sunrise and after sunset. This is to avoid the unrealistic appearance of projected light in broad daylight.
- The headlight only functions when you have a line light.
- A special 'bogie cam' is available if you switch to the right-hand 'head-out' view (**Shift+2 THEN Right Arrow**).
- Wipers operate on AI services if it's raining
- Classic brake squeal sound on pre-mid 2000s liveries.

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 headlight by pressing **H**.
- 5) If applicable, register the Cab Secure Radio or GSM-R.
- 6) If necessary, change the destination blind/display.
- 7) If you are operating a service where the doors are operated by the driver, turn the Door Key Switch & then turn it on.
- 8) Check the door interlock light is illuminated above the driver's side window.
- 9) If you have a proceed signal aspect and are in a cab fitted with a Driver's Reminder Appliance (DRA), turn it off 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

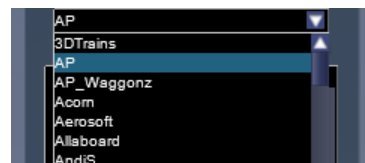
How to place

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.



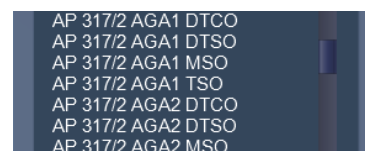
- 8) Go to the right-hand fly-out which should have appeared. Select 'AP' from the drop-down menu.



- 9) Tick the second & third box beside 'Class317Pack02'.



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



Formation

Class 317/2: DTSOA + MSO + TCO + DTSOB

Class 317/6 & 317/7: DTSO + MSO + TSO + DTCO

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 earlier in this manual for the relevant letter.

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

Cab Secure Radio (CSR)

To allow realistic configuration of the CSR unit in scenarios, **;CSR=DAASSSTTTT** 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).

GSM-R

To restrict the train reporting number and signal number that the player can use to register with on the GSM-R, add **;GSMR=1A22084** to the leading drive vehicle. In this example, '1A22' is the train reporting number and '084' is the signal number.

LED tail lights

You can add LED tail lights to a unit by adding **;LED=1** to the MSO number.

Overhead line decals

You can add older style OHL decals to a unit by adding **;OHL=1** to the MSO number.

Cold start

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

Nameplate

If using a unit number with a nameplate, add **;NP=0** to the MSO number to remove it.

Example MSO number

Z317671;L=1;Pa=new;LED=1

Key:

Z - Destination

317671 - Unit number

;L=1 - Logo

;Pa=new = Brecknell Willis high speed pantograph

;LED=1 - LED tail lights

Scenarios

APC317: 1P06 16:50 King's Cross - Peterborough

Route = ECML London - Peterborough
Track covered = King's Cross - Peterborough
Traction = WAGN 317655
Date = 21st June 1999
Duration = 1 hour 40 minutes



APC317: 1P10 05:10 Peterborough - King's Cross

Route = ECML London - Peterborough
Track covered = Peterborough - King's Cross
Traction = Ex-Greater Anglia 317708 & 317729
Date = 12th September 2004
Duration = 1 hour 40 minutes



APC317: 1Z18 17:07 York - Shenfield

Route = ECML London - Peterborough
Track covered = Peterborough - Finsbury Park
Traction = Greater Anglia 317661 & 317672
Date = 26th May 2012
Duration = 1 hour 20 minutes



APC317: 2K89 08:09 Welwyn Garden City - King's Cross

Route = ECML London - Peterborough
Track covered = Welwyn Garden City - King's Cross
Traction = Ex-BR Blue/Grey (NSE) 317353
Date = 14th November 1988
Duration = 30 minutes



APC317: 5E69 08:38 London Liverpool Street - Hornsey E.M.U.D.

Route = ECML London - Peterborough
Track covered = Canonbury West Jn - Hornsey Depot
Traction = Stansted Express 317723 & ONE Stansted Express 317729
Date = 5th May 2006
Duration = 30 minutes



APC317: 5Z17 09:23 Letchworth C.S. - Hornsey E.M.U.D.

Route = ECML London - Peterborough
Track covered = Outside Hitchin - Hornsey Depot
Traction = LTS 317305 & Network SouthEast 317343
Date = 4th October 2003
Duration = 40 minutes



Credits

Gü Studios - Modelling & texturing

Nicolas Schichan - Scripting

Great Northern - Assistance in recording sounds