

GEML Class 315 EMU

AP

Waggonz



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Technical Information

Manufacturer	BREL (British Rail Engineering Limited) York
Years built	1980 - 1981
Number built	61 (315801 - 315861)
Traction motors	x8 GEC G310AZ / 220 hp (164 kW) each OR x8 Brush TM61-53 / 220 hp (164 kW) each
Maximum speed	75 mph (121 km/h)
Coupling type	Tightlock
Length	19.80 m per DMS & 19.92 m per TS
Height	3.58 m
Width	2.82 m
Weight	127.5 tonnes per 4 car unit

Liveries

Blue/White



White



Cab Guide

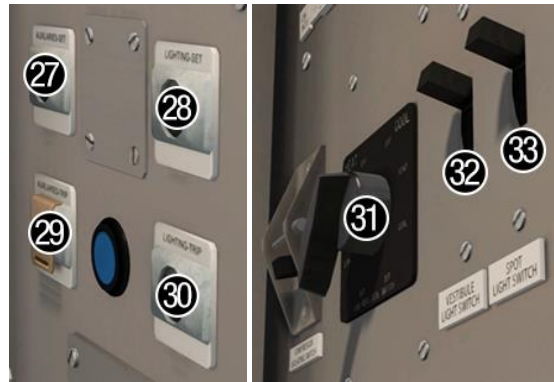


Desk

- | | |
|--|---|
| 1 - Brake handle | 14 - Car reminder slider |
| 2 - Driver's windscreen wiper switch | 15 - Main reservoir & brake cylinder gauge |
| 3 - AWS sunflower | 16 - Driver to guard bell |
| 4 - Door release buttons (left) | 17 - Line light indicator |
| 5 - Head/marker/tail lights switch | 18 - Door close button/door interlock indicator |
| 6 - Cab light switch | 19 - GSM-R (selected liveries) |
| 7 - Pantograph up button | 20 - Door release buttons (right) |
| 8 - Sander button | 21 - VCB tripped indicator |
| 9 - Pantograph down button | 22 - Reverser |
| 10 - AWS reset button | 23 - Master key |
| 11 - Speedometer | 24 - Driver Safety Device (DSD) lever |
| 12 - Horn | 25 - Power handle |
| 13 - Driver's Reminder Appliance (DRA) | 26 - Destination computer (selected liveries) |

Back Wall

- 27 - Auxiliaries set button
- 28 - Saloon lighting set button
- 29 - Auxiliaries trip button
- 30 - Saloon lighting trip button
- 31 - Air conditioning switch
- 32 - Vestibule light switch
- 33 - Spot light switch



Keyboard Controls

Non-standard keyboard controls are listed below:

Ctrl+B -	Auxiliaries SET
Shift+B -	Auxiliaries TRIP
Shift+Ctrl+U -	Cab door (driver's side) OPEN/CLOSE
Shift+Ctrl+I -	Cab door (non-driver's side) OPEN/CLOSE
L -	Cab light ON/OFF
E -	Deadman's pedal UP/DOWN
F7 -	Destination (manual) driver's blind DOWN
F8 -	Destination (manual) driver's blind UP
Shift+F7 -	Destination (manual) non-driver's blind DOWN
Shift+F8 -	Destination (manual) non-driver's blind UP
Shift+D -	Destination (manual) blind light ON/OFF
Z+C -	Door release buttons (left)
,+/-	Door release buttons (right)
R -	Door close button
Y -	DRA (Driver's Reminder Appliance) ON/OFF
N -	Driver to guard bell
F -	DSD (Driver Safety Device) lever DOWN/UP
Shift+H -	Headlight switch ANTI-CLOCKWISE
H -	Headlight switch CLOCKWISE
Space -	Horn (low tone)
B -	Horn (high tone)
Shift+W -	Master key IN/OUT
P -	Pantograph up button
Shift+P -	Pantograph down button
Ctrl+R -	Passenger door operation toggle DOO/GOO
Shift+O -	Passenger saloon lighting OFF
O -	Passenger saloon lighting ON
V -	Wiper switch LEFT
Shift+V -	Wiper switch RIGHT

Features

- 2 liveries
- 2 cab variants - 'with CSR' and 'with GSM-R / destination computer'
- Detailed internal & external audio
- [Driver Only/Guard Operation](#)
- [Wheelslip Protection \(WSP\)](#)
- [Manual and electronic destination displays](#)
- [Global System for Mobile Communication - Railway \(GSM-R\)](#)
- [Cab Secure Radio \(CSR\)](#)
- Neutral section functionality
- [Cold start option](#)
- Opening cab doors
- [Bits and Bobs](#)

Driver Only/Guard Operation

In reality, class 315s often operate routes where there is no guard on board the train and as a result, the driver has to close the doors themselves. Please see below on what the relevant procedure is and how to change the type of operation whilst in-game:

Driver Only Operation (DOO)

- 1) Open doors by pressing either **Z+C** for the driver's side doors or **,+ /** for the non driver's side doors. You do not need to press **T** but the facility to do so remains if you'd rather not use the specific door release buttons. If you try to open the doors on the wrong side, a message will appear saying this. Regardless though, the doors will open on the correct side to the platform.
- 2) Wait for passengers to finish boarding/alighting and when ready, press **R**, or the 'Doors Close' button on the cab desk, to close the doors. Please note that you can not close the doors when passengers are still boarding/alighting.
- 3) Once the door interlock light illuminates, you may depart.

Guard Operation

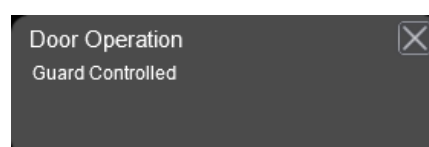
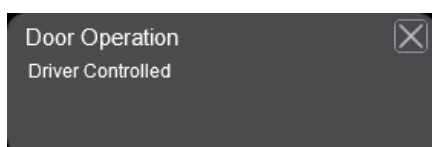
- 1) As soon as you stop at the platform, the guard will automatically open the doors. There is no need for you to press **T**.
- 2) Doors will be closed by the guard once passengers have finished boarding/alighting.
- 3) Once the door interlock light illuminates, the guard will give you two bells which you must then acknowledge by also giving two bells. This can be carried out by either pressing **N** or the 'Bell' button on the cab desk.

NOTE FOR SCENARIO CREATORS

If you don't wish for the guard to open the doors at a specific station, place the 'APW Autoguard Marker' at the start and end of the relevant platform.

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 your screen letting you know which option you have selected:



Wheelslip Protection (WSP)

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

Accelerating

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. Please see the table below for what to expect during each season and varying weather conditions:

	Dry	Rain/snow
Spring	No/very little wheelslip	Mild wheelslip
Summer	No/very little wheelslip	Mild wheelslip
Autumn	Mild wheelslip	Severe wheelslip
Winter	Light/mild wheelslip	Very severe wheelslip

Braking

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. Please see the table below for what to expect during each season and varying weather conditions:

	Dry	Rain/snow
Spring	No wheelslide	Light wheelslide
Summer	No wheelslide	Light wheelslide
Autumn	Mild wheelslide	Severe wheelslide
Winter	Light wheelslide	Very severe wheelslide

Destination Display

Manual Blind

The manual destination blind can be changed in-game by using the 'F7' & 'F8' keys. Please see below for a list of the available destinations and their relevant three-digit code if you wish to use them via the unit's number on an AI service:

029 Blank	038 Gidea Park	047 Seven Kings
030 Braintree	039 Harwich Town	048 Shenfield
031 Cheshunt	040 Hertford	049 Southminster
032 Chingford	041 Ilford	050 Special
033 Clacton On Sea	042 Ipswich	051 Stansted Airport
034 Colchester	043 Kings Lynn	052 Upminster
035 Depot	044 Liverpool Street	053 Walton On The Naze
036 Ely	045 Not In Service	054 Witham
037 Enfield Town	046 Romford	

Electronic Dot Matrix Display

A fully functioning electronic dot matrix destination display is provided with the *TFL Rail* livery which is available via the TS Marketplace. This display is operated via the internal computer found to the top-right of the cab.

To display a destination, press 'CANC' if there's a destination already present, then input the relevant code and press 'SEND'.

Please see below for a list of destination codes:

00001 Braintree	00014 Kings Lynn
00002 Cheshunt	00015 Liverpool Street
00003 Chingford	00016 Not In Service
00004 Clacton On Sea	00017 Romford
00005 Colchester	00018 Seven Kings
00006 Depot	00019 Shenfield
00007 Ely	00020 Southminster
00008 Enfield Town	00021 Special
00009 Gidea Park	00022 Stansted Airport
00010 Harwich Town	00023 Upminster
00011 Hertford	00024 Walton On The Naze
00012 Ilford	00025 Witham
00013 Ipswich	



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. On the GSMR variant of the liveries, 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'. 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.

Contacting signalman at red signal

- 1) When standing at a red signal, press the 'SG' button.
- 2) 'Sending - standing at signal' will appear when the message is sending.
- 3) When sent, 'Standing' will change to 'Sent'.
- 4) Soon after, the signalman will reply with 'Wait'. This will always be the reply regardless of whether you can pass the signal or not. A message will then appear as to whether you're allowed to pass the signal or not (the same as pressing **Tab** without you having to do so).

Cab Secure Radio (CSR)



Bar actually being able to speak to the signalman, a fully functioning CSR unit is included in this pack on non-GSMR variants. 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. A message will then appear as to whether you're allowed to pass the signal or not (the same as pressing **Tab** without you having to do so).
- 4) 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, 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.

Cold Start

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

- Main reservoir & brake cylinder pressures are 0.
- Auxiliaries (battery) tripped out
- Traction motor contacts are open
- Saloon lighting is off

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

- 1) Enter the cab and turn the master key in by pressing **Shift+W**.
- 2) Move the reverser from 'Off' to 'Neutral' by pressing **S**. As you do this, you will need to depress the DSD lever by holding **F**.
- 3) Go to the back wall of the cab and press the 'Auxiliaries-Set' button. This closes the battery contacts and allows 110V battery power to liven up the unit.
- 4) Reset the AWS self-test by pressing **Q**.
- 5) The auxiliary compressor will automatically start running to produce air to raise the pantograph. As soon as the "YOU MAY NOW RAISE THE PANTOGRAPH" message appears, there is sufficient air. Press **P** to raise the pantograph.
- 6) You must now wait for the main reservoir pressure to build to 7.5 bar. Once it has done so, you will be able to obtain a brake release.
- 7) If required, turn on the saloon lighting by pressing the 'Lighting-Set' button.

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:

- 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 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.
- 3 light cluster variants with correct bulb type (filament or LED) prototypically applied to each livery and individually numbered unit.
- All trains use windscreen wipers in the rain.
- The in-cab car reminder sliders are set automatically depending on how long your train is.

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** whilst holding **F** and acknowledge the AWS self-test by pressing **Q**.
- 3) Turn on the headlights by pressing **H**.
- 4) If applicable, register the GSM-R or CSR.
- 5) If necessary, change the destination blind/display.
- 6) Check the door interlock light is illuminated.
- 7) 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:

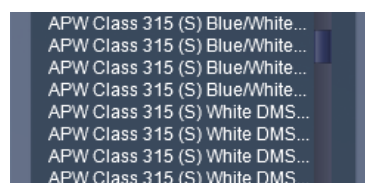
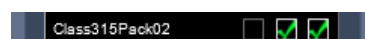
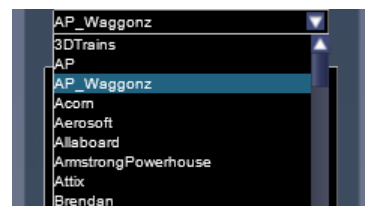
- 1) Move the reverser to your desired direction of travel by pressing either **W** for 'Forward' or **S** for 'Reverse'.
- 2) Move the brake handle to 'Step 1' by pressing **;**.
- 3) Move the power handle to 'Notch 2' by pressing **A**. At the same time, move the brake handle to 'Release' by pressing **;** 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.
- 7) In the event of an emergency brake application, you will need to wait for your train to come to a stop. You must then place the reverser in neutral, power handle in off, make sure the brake handle is in emergency and then release.
- 8) Should you need to place the reverser in 'Off' or 'Neutral', you will need to depress the DSD lever by holding **F**.

How to Use in the Scenario Editor

How to place

To place a class 315 in the scenario editor, please follow the instructions below:

- 1) In the left-hand rolling stock fly-out, click the object set filter which looks like a blue box with an orange arrow to the right of it.
- 2) Go to the right-hand fly-out which should have appeared. Select 'AP_Waggonz' from the drop-down menu.
- 3) Tick the second & third box beside 'Class315Pack02'.
- 4) The class 315 liveries should now be visible in the left hand rolling stock fly-out.



Numbering

When placing a class 315 in the scenario editor, you are able to control a number of features via the number of the unit.

Example number:

315818644951036;12;0084;5Y43

Key:

315818 - Unit number

64495 - Coach number

0/1 - Cold start = **0**. Prepared/warm = **1**.

036 - Last three digits of destination blind/display code

;12;0084;5Y43 - CSR area '12'. Signal number '84'. Train reporting number '5Y43'.

Cab Secure Radio (CSR)

To allow realistic configuration of the CSR unit in scenarios, 'AA;SSSS;TTTT' can be added to the driven vehicle. Please see below for what each sequence of letters represents:

- '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).

Scenarios

[315] 2F03 08:00 Braintree - Witham/2F04 08:26 Witham - Braintree

Route = GEML London Ipswich

Track covered = Braintree - Witham - Braintree

Traction = Blue/White 315825

Year = 2013

Duration = 45 minutes



[315] 2W72 19:40 London Liverpool Street - Shenfield

Route = GEML London Ipswich

Track covered = London Liverpool Street - Shenfield

Traction = White 315812 & 315850

Year = 2014

Duration = 45 minutes



[315] 5Z11 10:01 Gidea Park CHS - London Liverpool Street

Route = GEML London Ipswich

Track covered = Gidea Park CHS - London Liverpool Street

Traction = Blue/White 315821 & 315827

Year = 2016

Duration = 35 minutes



Credits

Waggonz - Modelling, texturing & scripting

Ronnie Olsthoorn - Additional modelling

AXYZ - Passenger models used under licence

RPD, MTR & Great Northern - Assistance in gathering visual reference and sound recordings