

# Class 150/1

## Enhancement Pack



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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 150-1 Enhancement Pack'. 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 requirements installed, as listed on the product page.
- 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.

# Liveries

Provincial - *Provincial AP*



Regional Railways - *RR AP*



Regional Railways (Centro) (with/without Regional Railways logo) -  
*RR (Centro) AP / Ex-RR (Centro) AP*



Regional Railways (GMPTE) - *RR (GMPTE) AP*





Regional Railways (Sprinter) - *RR (Sprinter) AP*



First North Western (with/without First North Western logos or  
with Northern Rail logos) - *FNW AP / Ex-FNW AP / Ex-FNW (NR)  
AP*



Northern Rail (2 headlight variants & with/without logos) - *NR AP / NR (NL) AP / Ex-NR AP / Ex-NR (NL) AP*



Northern (2 headlight variants) - *Northern AP / Northern (NL) AP*





Central Trains (with/without Central Trains or Northern Rail logos) -  
*CT AP / Ex-CT AP / Ex-CT (NR) AP*



Network West Midlands (with/without Northern Rail logos) - *NWM*  
*AP / Ex-NWM (NR) AP*



## London Midland - *LM AP*



Silverlink (2 headlight variants & with/without First Great Western or London Overground logos) - *SL AP* / *SL (NL) AP* / *Ex-SL (FGW) AP* / *Ex-SL (LO) AP*





## First Great Western - *FGW AP*



# Keyboard controls

Non-standard keyboard controls are listed below:

L -	Cab light ON/OFF
E -	Deadman's pedal
F7 -	Destination blind UP
F8 -	Destination blind DOWN
Y -	Driver reminder appliance (DRA) ON/OFF
C -	Driver to guard buzzer
Ctrl+D -	Driver vigilance device (DVD) ON/OFF
Z -	Engine start button
Ctrl+Z -	Engine stop button
I -	Instrument lights switch ON/OFF
J -	Marker lights switch ON/OFF
Shift+W -	Master key IN/OUT
O -	Saloon lights ON/OFF
K -	Tail lights switch ON/OFF
V -	Wiper switch ANTI-CLOCKWISE
Shift+V -	Wiper switch CLOCKWISE

# Features

## Voith T211r Hydraulic Transmission

Great care has been taken in recreating the characteristics of the 2-stage hydraulic transmission used in this unit.

### ***1<sup>st</sup> Stage - Torque Converter***

When accelerating from a standing start, the engine revs up and oil fills the torque converter, which allows acceleration to take place. There is a 2 second or so delay between the engine revving up and the oil filling the converter, which is why these units don't accelerate as soon as power is applied, and is what causes the distinctive, initial surge of rpm before the engine settles. This also explains why you don't get that same initial surge of rpm when powering up from 'Notch 1', instead of 'Off', as the converter is already filled with oil. During this 1<sup>st</sup> stage, engine rpm is directly controlled via the notch selected on the power handle.

### ***2<sup>nd</sup> Stage - Fluid Coupling***

At 45mph, the oil transfers from the torque converter to the fluid coupling which results in a reduction of engine rpm. During this stage, engine rpm is directly proportional to the speed of the train which means rpm will be the same regardless of which notch is selected on the power handle. All that varies is the load being placed on the engine. As speed increases then, you will gradually hear engine rpm rise in sync.

The unit will stay in this second stage until speed drops below 35mph. At this point, the transmission reverts to the first stage.

## Tread Brake Simulation

By default in Train Simulator, braking performance is constant throughout the speed range so a full brake application at 70mph will have the same level of retardation than at 10mph. This is a fairly good representation of how disc brakes work but for stock with tread brakes, like the class 150, this is not so realistic.

As a result, this pack has scripted brake force to simulate the relatively poor performance at high speed, and the 'bite' at lower speeds where performance increases quite significantly.



## **Adhesion**

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

### ***Season***

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

### ***Weather***

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

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

### ***Time of Day***

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

### ***Tunnels***

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

## ***Wheelslip Protection (WSP)***

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

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

- 1) Power is automatically reduced and the two gearbox fault lights illuminate in the cab.
- 2) Once the wheelslip stops, power is reapplied to the notch selected on the power handle and the two gearbox fault lights extinguish. If wheelslip reoccurs, the process starts again.

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 braking during poor adhesion, it is possible that the wheels will lock up and slide. As with wheelslip, the two gearbox fault lights will illuminate but there is no automatic sander or reduction of the brake, so it is up to you to either apply sand or move the brake handle to a lower step in an attempt to control the slide.

## **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.

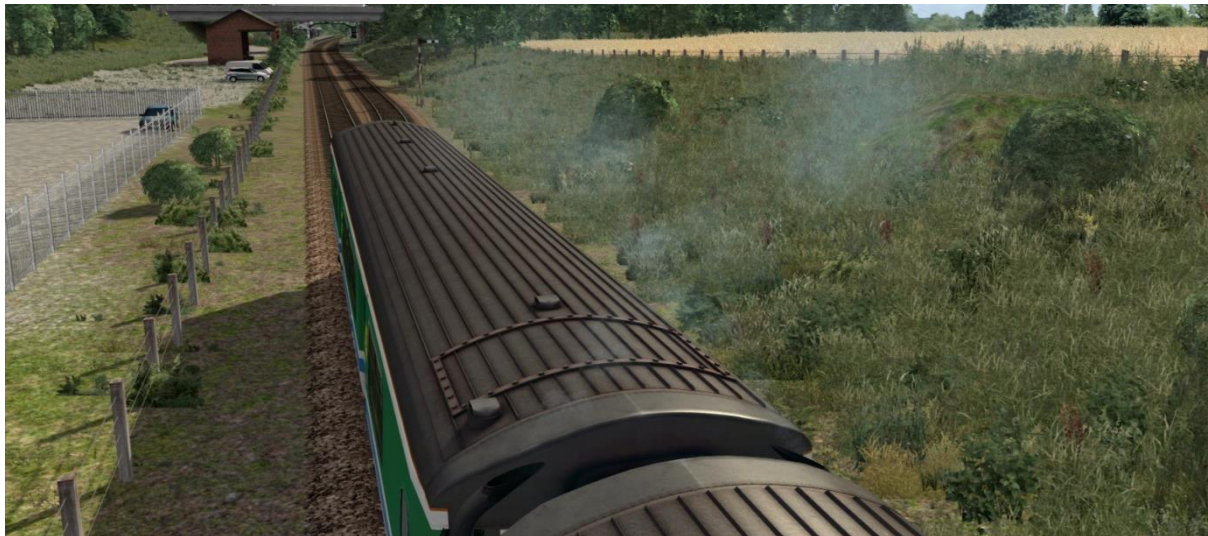
With this information in hand, we have managed to get rid of this limitation by making the train invisibly power or brake itself to simulate the effect that gravity has where Train Simulator Classic by default doesn't do so. This is all invisible to you as the player so you won't suddenly find the power 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.

## Automatic Unit Numbering

When placing a class 150 unit in the scenario editor or using one in Quick Drive, both the DMS & DMSL will automatically be given correct unit and coach numbers instead of you having to select each vehicle and changing their number manually so they match. The unit number is controlled via the DMSL coach if you wish to change it. Please note that the destination display on both driving coaches is also controlled via the DMSL coach.

## Dynamic Exhaust Effects

Dynamic exhaust effects mean that the exhaust reacts to what the engine is doing. For example, when in notch 7, the engine will produce more exhaust than it would when idling. Also, when revving up, exhaust thickens before thinning out when rpm settles. Equally, when revving down, exhaust thins. On top of that, when starting up, exhaust rises in sync with the sound of the engine revving up. Finally, in reality, the smokiness of each vehicle varies depending on how well maintained it is, so to represent this in the simulator, a random 'clag' factor is allocated to each vehicle which ranges from 1 to 10; 1 being the cleanest and 10 being the dirtiest.





## Player Changeable Destination Blind

The destination blind can be changed during a scenario by pressing either the F7 or F8 keys. For each livery, a set of relevant destinations are provided. Please see below for a list of the available destinations on each livery and their relevant code if you wish to use them via the unit's number on an AI service:

### ***Provincial / Regional Railways (Sprinter)***

<b>a - Derby</b>	<b>m - Nottingham</b>	<b>y - Bangor</b>
<b>b - Crewe</b>	<b>n - Cambridge</b>	<b>z - Chester</b>
<b>c - Sheffield</b>	<b>o - Wolverhampton</b>	<b>A - Cardiff</b>
<b>d - Cleethorpes</b>	<b>p - Birmingham New St.</b>	<b>B - Barmouth</b>
<b>e - Leeds</b>	<b>q - Birmingham Snow Hill</b>	<b>C - Aberystwyth</b>
<b>f - Lincoln</b>	<b>r - Manchester Piccadilly</b>	<b>D - Pwllheli</b>
<b>g - Newark</b>	<b>s - Manchester Victoria</b>	<b>E - Machynlleth</b>
<b>h - Newark Castle</b>	<b>t - Stratford upon Avon</b>	<b>F - Not in Public Use</b>
<b>i - Leicester</b>	<b>u - Blackpool North</b>	<b>G - Special</b>
<b>j - Matlock</b>	<b>v - Llandudno</b>	<b>H - Blank</b>
<b>k - Skegness</b>	<b>w - Shrewsbury</b>	
<b>l - Grimsby Town</b>	<b>x - Holyhead</b>	

### ***Regional Railways / Regional Railways (GMPTE) / First North Western / Northern Rail / Northern***

<b>a - Buxton</b>	<b>m - Manchester Piccadilly</b>	<b>y - Manchester Victoria</b>
<b>b - Rose Hill</b>	<b>n - Manchester Airport</b>	<b>z - Chester</b>
<b>c - Castleford</b>	<b>o - Manchester Oxford Rd</b>	<b>A - Southport</b>
<b>d - Clitheroe</b>	<b>p - Morecambe</b>	<b>B - Ormskirk</b>
<b>e - Halifax</b>	<b>q - Kirkby</b>	<b>C - Barrow</b>
<b>f - Bolton</b>	<b>r - Whitehaven</b>	<b>D - Carnforth</b>
<b>g - Stockport</b>	<b>s - Colne</b>	<b>E - York</b>
<b>h - Preston</b>	<b>t - Leeds</b>	<b>F - Not in Public Use</b>
<b>i - Wigan</b>	<b>u - Carlisle</b>	<b>G - Special</b>
<b>j - Lancaster</b>	<b>v - Blackpool South</b>	<b>H - Blank</b>
<b>k - Workington</b>	<b>w - Blackpool North</b>	
<b>l - Ellesmere Port</b>	<b>x - Liverpool</b>	

## ***Regional Railways (Centro) / Central Trains / Network West Midlands / London Midland***

a - Birmingham New St	m - Wolverhampton	y - Worcester Foregate St
b - Birmingham Snow Hill	n - Rugby	z - Great Malvern
c - Birmingham Moor St	o - Northampton	A - Hereford
d - Birmingham Intl	p - Leamington Spa	B - Longbridge
e - Coventry	q - Dorridge	C - Walsall
f - Nuneaton	r - Shirley	D - Bletchley
g - Tamworth	s - Stratford-upon-Avon	E - Bedford
h - Lichfield TV	t - Stourbridge Jn	F - Not In Service
i - Rugeley TV	u - Stourbridge Town	G - Special
j - Stafford	v - Kidderminster	H - Blank
k - Shrewsbury	w - Droitwich Spa	
l - Telford Central	x - Worcester Shrub Hill	

## ***First Great Western***

a - Penzance	m - Newton Abbot	y - Bristol Temple Meads
b - St Ives	n - Exeter St Davids	z - Bristol Parkway
c - St Erth	o - Exmouth	A - Cardiff Central
d - Truro	p - Barnstaple	B - Gloucester
e - Falmouth Docks	q - Taunton	C - Cheltenham Spa
f - Newquay	r - Weymouth	D - Worcester S Hill
g - Par	s - Frome	E - Swindon
h - Liskeard	t - Southampton	F - Weston-S-Mare
i - Looe	u - Portsmouth Hbr	G - Special
j - Plymouth	v - Westbury	H - Blank
k - Gunnislake	w - Severn Beach	
l - Paignton	x - Avonmouth	

## ***Silverlink***

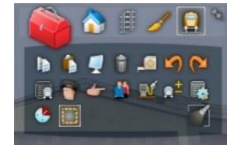
a - Barking	f - Coventry	k - St. Albans Abbey
b - Gospel Oak	g - Northampton	l - London Euston
c - Bedford	h - Rugby	m - Not In Service
d - Bletchley	i - Milton Keynes	n - Special
e - Birmingham	j - Watford Junction	o - Blank

## 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:

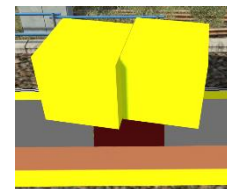
- 1) In the scenario editor, go to the location at which you would like the AI train's horn to sound, and press **Spacebar** 3 times. The track will now display a certain colour which represent its speed limit.

- 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.



## Bits and Bobs

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

- The driver to guard buzzer is inactive when the doors are open. This is to prevent the driver incorrectly giving the right away buzzer.
- The reverser must be placed in 'Neutral' to start the engine.
- Power cannot be applied if the brake handle is in 'Step 2', 'Step 3' or 'Emergency'.
- If the emergency brake applies, power can only be regained if the power handle is returned to 'Off'.
- 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.
- In-cab fan now operational via desk switch with low and high settings.
- Slow and fast setting added to windscreen wiper.
- Separate engine start & stop buttons now operational.
- 4-step reverser (Off/Reverse/Neutral/Forward).
- Individually controlled headlights, marker lights & tail lights.
- Detailed headlight, marker light & tail light textures for both new and old styles.
- Improved appearance of Driver Reminder Appliance (DRA).
- Vehicle and unit number displayed on the cab desk.
- Player controllable saloon lights.

# Setting Up the Driver's Cab

Please follow these steps to set up the cab of the class 150 so you are ready to move:

- 1) Turn the master key in by pressing **Shift+W**.
- 2) Move the reverser to the 'neutral' position by pressing **W**.
- 3) Cancel the Driver Vigilance Device self-test by pressing **E**. (FGW only)
- 4) Cancel the AWS self-test alarm by pressing **Q**.
- 5) Turn off the tail lights by pressing **K**.
- 6) Turn the marker lights on by pressing **J**.
- 7) Turn the headlights on by pressing **H**.
- 8) Turn the Driver Reminder Appliance (DRA) off by pressing **Y**.

## Scenarios

### **APC150/1EP: 07:40 Gospel Oak - Barking**

Route = North London & Goblin Lines

Track covered = Gospel Oak - Barking

Traction = Silverlink 150131

Year = 2007

Duration = 35 minutes



### **APC150/1EP: 14:30 Willesden T.M.D. - Gospel Oak**

Route = North London & Goblin Lines

Track covered = Willesden T.M.D. - Gospel Oak

Traction = Silverlink 150129

Year = 2007

Duration = 35 minutes



### **APC150/1EP: 15:38 Barking - Gospel Oak**

Route = North London & Goblin Lines

Track covered = Barking - Gospel Oak

Traction = Silverlink 150128

Year = 2003

Duration = 45 minutes



## Credits

**Nicolas Schichan** - Advanced scripting

**Arriva Trains Wales** - Assistance in recording sounds

**Video 125** - Audio samples