Virgin Trains
Class 390 'Pendolino'

Release Version 1.0

Whilst we do our utmost to reproduce sounds that are accurate and true-to-life, sometimes these sounds may not completely tally with the user's expectation. Due to the nature of the simulation, it is often not possible to reproduce a completely accurate soundscape for a variety of reasons such as limitations with our current technology and occasional inability to gain meaningful access to the locomotives being created. You should therefore regard the audio reproduction for our locomotives as authentic interpretations rather than perfect recreations.

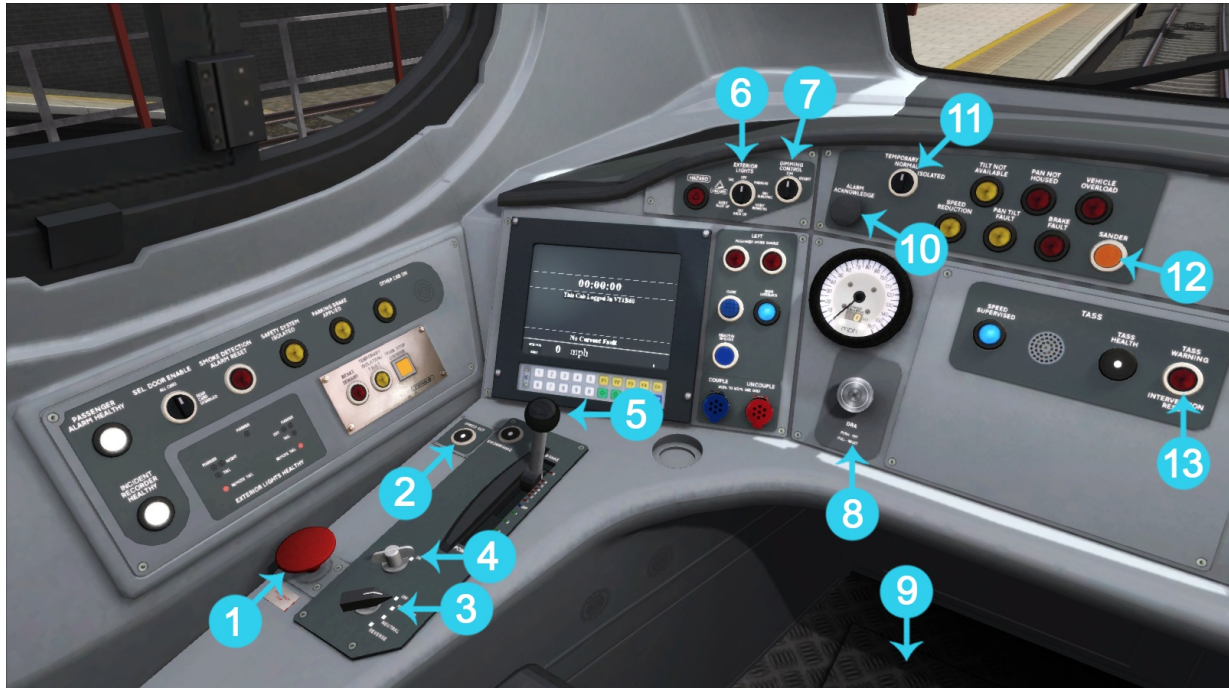Release Version 1.0

1 Rolling Stock

1.1 Class 390 'Pendolino' in Virgin Trains livery

- Coach A – DMSO
- Coach B – MS
- Coach C – PTSRMB
- Coach D – MS
- Coach E – TS
- Coach F – MS
- Coach U – TS
- Coach G – MF
- Coach H – PTF
- Coach J – MF
- Coach K – DMRF

2 Driving the Virgin Trains Class 390 'Pendolino'

2.1 Cab Controls

1	Emergency Brake (Backspace)	**13**	TASS Warning Intervention (mouse only)
2	Speed Set (Ctrl+C)	**14**	AWS Reset (Q)
3	Reverser (W / S)	**15**	Windscreen Wipers (V / Shift+V)
4	Master Key (mouse only)	**16**	Pantograph Selection Switch (U)
5	Combined Power Handle (A / D)	**17**	Pantograph Up (P)
6	Headlights (H / Shift+H)	**18**	Pantograph Down (P)
7	Instrument Lights (I)	**19**	Passenger Emergency Holdover (mouse only)
8	DRA (Y)	**20**	Cab Lights (L)
9	DSD/DVD Pedal	**21**	Air Conditioning Controls (mouse only)
10	Tilt Alarm Acknowledge (Q)	**22**	Horn (Space / B)
11	Tilt Isolation (O)	**23**	Signal Bell (C)
12	Sander (X)	**24**	Notepad Light (mouse only)

2.2 Other Keyboard Controls

1 External Alarm Sounds (Ctrl+A)

2 DSD/DVD Activate/Deactivate (Ctrl+D)

3 Eco Mode (Ctrl+F)

4 Destinations (Ctrl+5 / Ctrl+6)

5 Nose Coupling Hatch (N)

2.3 AWS

The Automatic Warning System will self test once the reverser is moved from the off position. If you fail to acknowledge an AWS warning you will get a AWS brake demand (emergency brake application) which will last for 60 seconds after the alarm has been acknowledged.

2.4 Speed Set

Speed set will round the speed up or down to the nearest 5mph interval and maintain it there, so 97mph will round down to 95mph and 98mph will round up to 100mph. Sufficient power must be applied on the throttle handle to maintain speed - the speed set will automatically reduce power to control speed, in addition it will also automatically apply the brakes to control speed on a descending gradient. Moving the combined power handle passed the off position will cancel any speed set present. Speed set can be activated and deactiavted with Ctrl+C.

2.5 Tilt Alarm

The tilt alarm will self-test after the AWS self-test is completed. It can be cancelled with the Q key (general reset key) or the button next to the tilt fault indicator lights. The tilt alarm will sound if tilt permission is revoked. This can be done by isolating the tilt system using the switch in the cab or via scenario scripting by setting the control value "TrackTiltIsolate" to 1. A loss of tilt is indicated by an illuminated 'tilt not available' fault light.

2.6 TASS (Tilt Authorisation and Speed Supervision)

The Tilt Authorization and Speed Supervision (TASS) system features balises located in the track which provide information to the on-board computers, telling the train when it is authorized to tilt and the maximum speed that the Class 390 can operate on that particular stretch of track. For the sake of simplicity in TS2018 the system is done automatically and no balises are required or present, with braking curves for speed changes being generated automatically.

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In essence, TASS operates as a form of speed monitoring, being a more sophisticated version of the earlier C-APT system found on the APT-P. The system works in the background and should you drive the route correctly TASS will never intervene.

The basic functions of TASS are as follows.
- TASS demand light extinguished, no alarm sounding – Normal operation, speed in normal ranges.
- TASS demand light flashing, alarm sounding – speed exceeded track limit, or braking curve by 3.5mph. Alarm cannot be cancelled, will automatically cease once speed dropped to correct range.
- TASS demand light steady, no alarm sounding – Speed exceeded track limit or braking curve by 6mph. Emergency brake application actuated. Emergency application cannot be cancelled at this stage.
- TASS demand light flashing, no alarm sounding – Speed returned to normal levels by TASS demand application, emergency application can be cancelled by pressing the Q key or the intervention reset button, otherwise train will be brought to a halt.
- The Braking curves for the TASS system have been calculated at a deceleration rate of 0.88ms^{-2} which is approximately equal to step 4. Should you exceed the braking curve and get a TASS alarm you will need to select Step 5 or 6 in order to correctly meet the upcoming speed limit.

2.7 Sanding
Sanding is either applied automatically during an emergency brake application or by pressing the sanding button during braking. Pressing the button will drop sand for 10 seconds. Sanding can not be activated unless the power handle is in a brake notch.

2.8 DRA
If DRA is applied power will not be taken.

2.9 Reverser
If the reverser is moved away from the forward or reverse position while in motion a DSD brake application will ensue. The reverser is locked in position if the combined handle is in any power notch.

2.10 DSD/DVD
If the DSD (Driver safety device) pedal is lifted for more than 6 seconds with the reverser set in any direction or speed is above 4mph an emergency application will ensue. If DVD (driver vigilance device) is active and the reverser is in either forward or reverse an alarm will sound every 1 minute and 45 seconds which can be cancelled with the Q key or by raising the foot pedal. Failure to cancel alarm will cause an emergency brake application. This system can be activated or deactivated with Ctrl+D.

2.11 Eco Mode
Normally the class 390 uses Eco Mode which restricts power to 85% of its maximum. If running behind time Boost mode may be used (Ctrl+F) which will allow full power to be applied.

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2.12 Combined Power Handle

The combined power handle features the following notches:

- Emergency
- Brake 6
- Brake 5
- Brake 4
- Brake 3
- Brake 2
- Brake 1
- Off
- Power 1
- Power 2
- Power 3
- Power 4

In all braking notches apart from emergency the electric brake (rheostatic or regenerative) is in use. This brake fades under 25mph and is automatically blended with the air disc friction brakes to make up for any short falls in braking (at any speed). In step 1 and 2 the electric brake is used, as well as the friction brakes on the unpowered axle of each motor coach. In notches 3-6 the brakes on the remaining coaches are brought into use, their pressure being varied depending on vehicle loading in order to create a consistent deceleration rate in each notch. In Emergency the electric brake is not used and the friction air brakes applied fully on each vehicle, sanding is also applied. Emergency however doesn't provide additional brake force over notch 6.

2.13 External Alarms

By default the alarms such as AWS, DSD, TASS etc are audible outside the cab. Should you not want this you can disable external alarms with Ctrl+A.

3 Acknowledgments

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