

# 9400 PANNIER TANKS



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## Introduction

Thank you for purchasing the Hawksworth 9400 Pannier Tanks Add-on for Train Simulator.

This pack contains all 210 of the 94xx engines including the original 10 with superheated boilers.

Liveries go from the last version of Great Western green right through to preserved versions of 9466 fitted with mainline AWS systems.

As with all of our products the 9400 Pannier Tanks are crafted to be challenging, rewarding and as immersive as possible when used in Advanced Mode however if you prefer, the engines are equally as happy running in simple mode and standard mode using the F4 HUD, keyboard, mouse and/or Xbox controller.

Please read this manual thoroughly, especially to get the best from Advanced Mode. We hope you enjoy driving these Great Western classics.

All the best,  
Victory Works



## Features

- Simple, standard and advanced driving modes
- Xbox controller support *SIMPLE AND STANDARD MODES ONLY*
  
- GWR/BR(W) Hawksworth 9400 Pannier Tank Locomotive
  - GWR Green (9400-9 superheated)
    - G W R text (1947)
    - British Railways serif text (1948-9)
  - BR Black
    - British Railways text (1949)
    - 1950-56 Logo
    - 1956-65 Logo
    - 1958-65 Logo, Lickey Banker (no ATC)
  - BR Black – Worn
    - 1950-56 Logo
    - 1956-65 Logo
    - 1958-65 Logo, Lickey Banker (no ATC)
  - Preserved (9466 with mainline fittings)
    - GWR Green
    - BR Black 1950-56 Logo
  
- Customisable engine numbers and shed codes
- Optional parts and fittings including painted or polished safety valve covers, chimneys, power discs, ATC, speedometer and much more
- Custom sound sets inside and out
- Realistic cab with multiple views, including dual head out and fully modelled firebox and coal
- Realistic wheel slip physics and effects *ADVANCED MODE ONLY*
- Simulated steam chest *ADVANCED MODE ONLY*
- Realistic train pipe, reservoir vacuum and steam braking *ADVANCED MODE ONLY*
- Cylinder cock management *ADVANCED MODE ONLY*
- Boiler management with priming possible *ADVANCED MODE ONLY*
- Realistic injector control *ADVANCED MODE ONLY*
- Realistic “by the shovel” stoking with synchronised sound *ADVANCED MODE ONLY*
- Dynamic steam and smoke colour and quantity

- Realistic boiler water gauges effected by gradient, acceleration and speed and with blow down test
- Opening windows (with rain effects), doors, weather panels and roof hatch
- Dynamic lamp setting
- Cab light effects including firebox glow, water gauge lamp and cab lamp
- Second valve regulator effects *ADVANCED MODE ONLY*
- Atmospheric AI effects
  
- Includes the following rolling stock
  - 20ton Toad Brake Van AA13/15
    - GWR Grey
    - BR Grey
    - BR Bauxite
    - Customisable number and location name
    - “ActiveGuard” system
  - GWR Shunters Truck
    - GWR Grey
    - BR Bauxite
    - Customisable number and location name
  - GWR Grain Wagon Diagram V.25
    - GWR Grey
    - BR Grey
  
- 6 scenarios
- Quick Drive consists

## Background

The Hawksworth 9400 Class is a class of 0-6-0 pannier tank steam locomotive which was primarily used for shunting and banking duties.

The first ten 9400s were the last steam engines built by the Great Western Railway at Swindon and after the railways were nationalised in 1948 another 200 were built by private contractors

R. Stephenson & Hawthorns (100)

W. G. Bagnall (50)

Yorkshire Engine Company (50)

The 9400 was similar to a pannier tank iteration of the 2251 class, and actually utilized the same boiler and cylinders as the 2251. However, it was actually a taper-boilered advancement of the 8750 subgroup within the 5700 class. This resulted in a beneficial boost in boiler power, but came with a notable increase in weight that limited its route options. While the 10 GWR-built locomotives were equipped with superheaters, the rest were not.

Numbered 9400–9499, 8400–8499 and 3400–3409, they were given the power classification 4F by BR.

Most 9400's had very short working lives as the duties for which they were designed began to disappear due to changes in working practices or being taken over by the new diesel locomotives.

Two locomotives have survived into preservation, with the oldest of the class, 9400 as part of the National Collection and 9466 being well travelled on the preserved railway circuit as well being fitted for mainline running.

## Scenarios

The 9400 Pannier Tanks Add-On comes with the following 6 scenarios.

**Route: Riviera Line in the Fifties: Exeter - Kingswear Route** [\[Link to Steam\]](#)

### **[9400] Goodrington Shunt**

Friday 17th June 1955

Shunt the Morning Goods at Goodrington before taking some empty wagons to Torre

*45 minutes*

### **[9400] Take Your Empties Back**

Monday 29th September 1958

Gather the empty coaching stock at Kingswear and take it to Goodrington before shedding the loco overnight at Brixham

*50 minutes*

**Routes: Just Trains Chiltern Main Line** [\[Link\]](#) and **Birmingham Cross City** [\[Link\]](#)

### **[9400] Pannier Rambler IV Parts 1 & 2**

Saturday 12th November 2016

The Pannier Rambler IV railtour in 2016 was set to be a very special tour. Sadly, on the day 9600 was failed back at Tyseley so couldn't complete the day. A Class 47 diesel assisted 9466 instead. Now you can rewrite history and complete the day as it should have been, with 9466 and 9600 at the head. In part 1 you will take the short run from Tyseley to Birmingham Snow Hill. In part 2 you will tackle the infamous Lickey Incline from Bromsgrove.

*Part 1 – 20 minutes; Part 2 - 45 minutes*

Additional Requirements: *GWR Pannier Tank* [\[Link\]](#); *Vintage Trains Stock Repaints* [\[Link\]](#); *BMG Black 5* [\[Link\]](#); *Class 68 Addon* [\[Link\]](#); *Voyager Advanced* [\[Link\]](#)

**Route: Keighley and Worth Valley Railway** [\[Link\]](#)

### **[9400] Pannier Pullman**

Sunday 22nd August 2010

Returning from a visit to another railway, a call was put in to request if 9466 could be borrowed to cover for a temporary loco shortage. The owner obliged. 9466 is here for a week and is to be put straight to work on the Pullman luncheon service. It started up at Oxenhope and passengers are enjoying their delicious meals. Complete the round trip, heading up through the valley to Oxenhope. The Pullman's will need shunting off the set and a normal set formed at Oxenhope.

*1hr 45 minutes*

Additional Requirements: *AP Mk1s* [[Link](#)]; *Worth Valley Loco & Rolling Stock Pack* [[Link](#)]; *Standard 4 2-6-4T Expansion* [[Link](#)]; *Lancashire & Yorkshire Carriage Pack 1* [[Link](#)]; *WD 2-8-0* [[Link](#)]; *Weardale Route* [[Link](#)]; *Ivatt 2MT Tank* [[Link](#)]

**Route: West Somerset Railway – TO THE SEA!** [[Link](#)]

### **[9400] Season Opener Preparations**

Wednesday 20th March 2024

With the first trains of the season fast approaching, the railway is a hive of activity with stock movements, PW activities and more. Our job today is to take the Quantock Belle(QB) set from Minehead back to its base at Bishops Lydeard(BL) so the QB team can prepare it for the season. Also, some carriages have been withdrawn for maintenance, leaving Minehead short of coaches. Therefore, a set from BL will need to be brought back to Minehead so it can form the first service of the new season from here.

*2hrs*

Additional Requirements: *GWR Manor Pack* [[Link](#)]; *AP Mk1s* [[Link](#)]; *Departmental Hoppers Pack* [[Link](#)]; *West Somerset Wagon Pack* [[Link](#)]; *West Somerset Diesels* [[Link](#)]; *GWR 7200 Addon* [[Link](#)]; *Weardale Route* [[Link](#)]





## Control Modes

There are 3 ways to drive the 9400 Pannier Tank locomotives

### Simple Mode

This is selected using the menu in Train Simulator and provides a simple stop/go, forwards/backwards set of controls via the simulators built in HUD.

### Standard Mode

This is the default mode if you choose to drive in Expert mode using the Train Simulator menu. The locomotive will operate with more complex controls and can be driven using the F4 HUD or an Xbox controller.

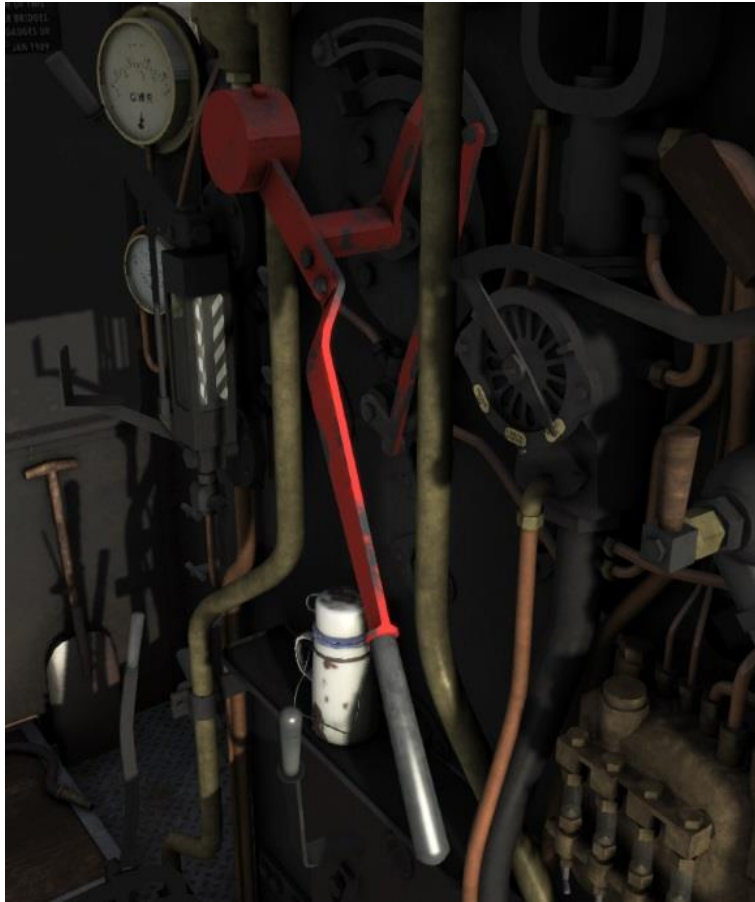
### Advanced Mode

This is an advanced mode for those who want a more realistic experience and introduces features such as condensed water in the cylinders, overfilling the boiler, realistic wheel slip and a simulated steam chest. To achieve these extra functions use of a keyboard is required, although this can be used in conjunction with mouse operation or the F4 HUD.

To turn on Advanced Mode you can press Control and A at any time and this will also turn it off again.

The **Advanced Mode** controls and features are shown below.

## Driving Controls



### 1. Regulator

This controls the amount of steam allowed into the cylinders, hence directly controlling the speed in conjunction with the reverser.

Keys: A,D

#### **Advanced Mode**

In Advanced Mode the locomotive steam chest is simulated. This will add a delay and smoothing to the increase and decrease of the regulators power to simulate steam moving through the locomotives pipes and valves. Please note that the F5 HUD regulator value will not reflect the actual position of the in-cab regulator, but the value used to simulate the chest.

The 9400 Pannier Tanks also feature a simulated second valve. When observing GWR engines being driven in real life it is common to see the driver fully open the regulator before closing it. The reason for this is to realign the second valve so that it is fully closed when the regulator is closed. If this is not done then the regulator will

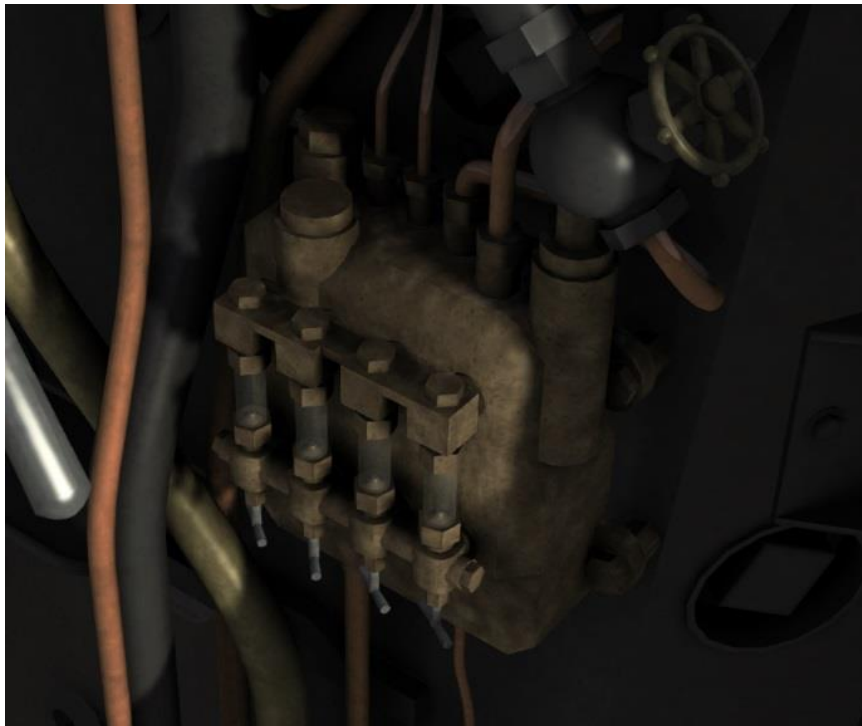
not always close fully. If the regulator is forced closed this can stop the flow of steam, however on opening it again the second valve port is already open and a very large amount of steam can flow immediately.

This is all simulated in Advanced Mode, so if you open the second valve (opening the regulator more than about halfway) you will need to open it fully to realign the valve before you close it.

Another feature of Advanced Mode is the jockey valve on the regulator which needs to be open to continue pumping oil around the moving parts of the engine using the hydrostatic lubricator. If the engine is moving you must make sure that the regulator is open slightly to ensure that steam is passing into the lubricator to pass oil around the engine.

As we are unable to simulate the physical notch on the regulator slide that exists in reality to help the driver to align the regulator, we have added a key control that will place the regulator in the correct location where no steam will be passing to the cylinders but it will operate the lubricator.

Key: Shift A



You can check that the jockey is open and the lubricator is working by looking at the drops of oil passing through the sight glasses of the lubricator. You can also adjust the speed of these oil drops using the sight glass valves – the ideal speed should be for a drop to pass approximately every 4 seconds.



## 2. Reverser

This is like the gears on a car. It is usual to start with the reverser set at 75 percent cut-off (full). As you pick up speed you reduce the cut-off, thereby allowing economic driving as well as good speed whilst hauling a load.

Keys: W, S

### **Advanced Mode**

To move the reverser requires the hand lock to be taken off. To do this, press and hold the E key on the keyboard, move the reverser to the required position, and then release the hand lock (let go of the E key).

Key: E

NOTE: The regulator needs to be reduced in order to move the reverser lever. If this is not done and the reverser lock is released the reverser will shoot forwards/backwards at speed



### 3. Cylinder Cocks

#### *Advanced Mode*

When a locomotive sits static for any amount of time, water condensation builds up in the cylinders. Thus when the piston is in motion, and because water does not compress, the cylinder will explode. The cylinder cocks are designed to expel this condensed water and should be opened for at least 4 turns of the locomotive wheels when the locomotive sets off after being stationary for some time.

There is also an audio cue when the cylinders are clear, the pitch of the steam changing as it no longer contains any expelling water.

The amount of stationary time varies depending on the time of day (the assumption being that most steam locomotives were working from early in the morning) and also the weather. If you stop for more than a couple of minutes it is safer to open them for a few wheel rotations just to be sure. Always ensure they are open when first setting off in a scenario.

Key: C



#### 4. Sanders

The sanders assist in starting and stopping without the wheels slipping.

Keys: X, Shift X

##### ***Advanced Mode***

Sand is essential in pulling away with minimal wheel slip in wet or icy conditions. You should use the front sanders when travelling boiler first and the rear sanders when travelling tender first.



## 5. Firebox

Ensure the firebox doors are fully open to allow maximum stoking. A related tool is the coal box door in the coal bunker. When the firebox door is open, pull the coal bunker door to regulate the input of coal into the firebox.

Key: F

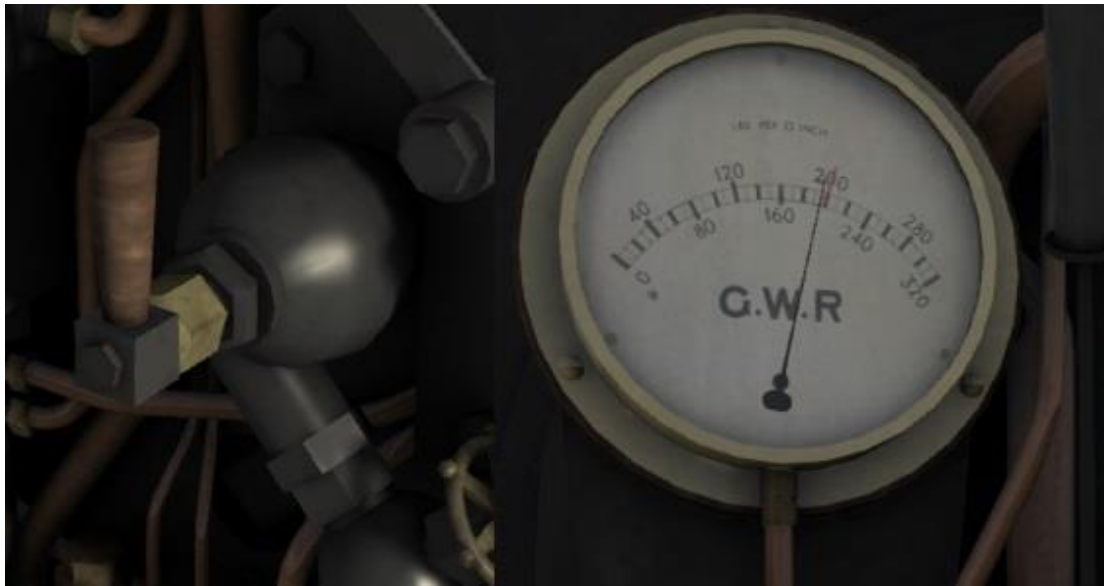
Keys: R, Shift R (Stoking)

### **Advanced Mode**

In Advanced Mode the Pannier Tanks feature realistic stoking by the shovelful. As default in Train Simulator coal is slowly trickled into the firebox at a steady rate. In reality coal is thrown into the firebox by the shovelful and in Advanced Mode this is now the case for this locomotive as well. The shovel still controls the amount of coal although this now varies from approximately half a shovelful to a loaded shovelful.

However with this comes the chance to tire out your fireman! Should you force him to shovel too much in too short a time he will gradually slow down between each shovelful and finally stop shovelling altogether – please note that a GWR fireman is tough as nails and it takes a lot to make him do this!

The sound of the shovel is fully synchronised to the actual coal going into the firebox so you will be able to tell if he is slowing down. If he stops completely you will be shown a message to that effect and will receive another when he has recovered enough to continue.



## 6. Blower and Boiler Pressure Gauge

The most useful application of the blower is when the regulator is at idle. Since there is no throughput of steam when at idle, air flow is minimised and therefore the fire loses heat. In some circumstances (such as when the safety valve is going off) this is acceptable but if you need to get some pressure into the boiler while the regulator is closed then fully opening the blower will force air over the fire, increasing temperature and then boiler pressure. It is good practice to turn off the blower again when you open the regulator to save on unnecessary steam usage.

Keys: N, Shift N

If the boiler exceeds its safe pressure the first safety valve will start to hiss and will then open and the excess steam will vent quickly and noisily. If the boiler is still continuing to gain pressure a second larger valve will open. Both valves will close again when the boiler has returned to a safe pressure level.





## 7. Dampers

Another tool related to the firebox. This helps control the heat of the firebox. Closing it will reduce the air flow through the fire, thereby lowering heat and steam production. Opening it will allow more air in, hence producing more heat and steam.

Keys: M, Shift M

### ***Advanced Mode***

There are 2 damper levers; a front damper and a rear damper. Each has 3 notches: closed, half and full. To get the maximum amount of air to keep the locomotive running well you need to set the damper in the **OPPOSITE** direction of travel to fully open (pulled up).

In addition to the dampers you can increase the amount of air entering the firebox by opening the firebox doors and this can be tempered by closing the firebox flap.



### **8. Fireman's Injector Steam (left)**

The injectors take steam from the boiler and use it to blast water from the tanks into the boiler. There are two fitted, one on the fireman's side and the other on the driver's.

Key: I, Shift I

### **Drivers steam Injector Steam (right)**

The driver's injector is slightly larger and will add water faster.

Key: O, Shift O

***Advanced Mode***

See below.



## 9. Fireman and Driver Water Taps

These are used to adjust the flow of water for the appropriate injector control.

Keys: K, Shift K / L, Shift L

### **Advanced Mode**

In Advanced Mode you will need to operate the injectors as the real thing and balance the water and steam to use them properly.

The correct procedure is as follows – for either injector use the appropriately named controls:

1. Fully open the water control tap.
  - You will hear and see water coming from under the left or right hand side of the cab.
2. Turn the injector steam lever until you hear the injector start working.
  - If you hear a hiss and see a jet of steam under the cab you have too much steam pressure and the water is not entering the injector.
  - If you hear running water and see water running from the pipe under the cab you need more steam to force it into the boiler.



## 10. Boiler Sight Glass

Attached to the boiler is a strong glass tube indicating the current level of water in the boiler. If this reaches the bottom then the fusible plugs will melt and relieve the boiler pressure whilst providing a warning to the locomotive crew.

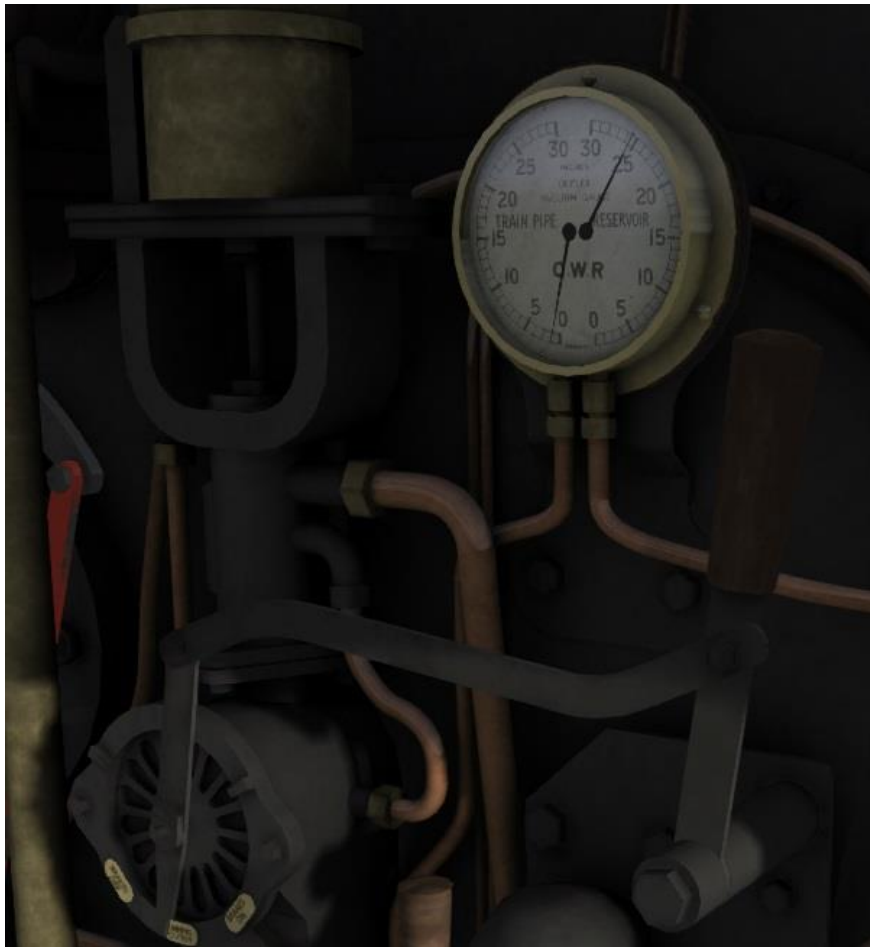
The water level is not static when the locomotive is in motion and will wobble around appropriately. It is also affected by gradients, acceleration and deceleration.

### ***Advanced Mode***

Overfilling the boiler (past 110%) at high pressure can force water into the cylinders and cause the same problems as having condensed water from standing still. It can also cause the regulator to become jammed open! If you overfill the boiler, open the cylinder cocks immediately and leave them open until the water level in the glass falls.

You can also perform a blow down test on the gauge glass by doing the following:

1. Shut off the water supply to the top and bottom of the glass by pulling the lever down, the water will empty from the glass.
2. Return the lever to its previous position by reversing the above process to refill the glass.



## 11. Combined Brake and Brake Pressure Gauge

The vacuum brake is used to pull the brake shoes away from the wheels by creating a vacuum in the pipes connected to them. The brake has 3 settings, brake off which forces a vacuum into the pipes and takes the brakes off, brake on which lets air into the pipes and applies the brakes, and brake running which holds the vacuum steady at its current pressure.

The brake pressure gauge shows the current pressure in the system, from 0" (on) to 25" (off).

In basic mode all of this can be controlled by the brake lever.

Keys: ' (apostrophe), ; (semicolon)

### **Advanced Mode**

In Advanced Mode the 9400 Pannier Tanks feature a combined brake system using steam for the engine and vacuum for the train.

**Important:** Note that in Advanced Mode the F4/F5 HUD brake pressure may NOT be representative of the engines brake gauges and you should use the gauges in the cab

to operate the engine correctly. Please also note that the setting of the lamp head codes is CRITICAL to the operation of the brakes so that the engine knows how much of the train is made up of fitted (vacuum braked) rolling stock.

Vacuum brakes operate by having a pressure difference between a train pipe and a reservoir. When the train pipe is less than the reservoir then the difference between these pressures is how hard the brakes are applied. The brakes are fully applied with a difference of approximately 20" or more, and fully released with a difference of approximately 3" or less.

To this point we have referred to the train pipe as it applies to the engine, however on a fitted train (where some or all of the rolling stock is fitted with vacuum brakes) this pipe is shared along the whole train via flexible connecting pipes. This means that the ejector and pump are creating vacuum along the whole length of the train and so this will increase the time that it takes to create or release pressure from the train pipe. In addition fitted stock have their own reservoirs so even if the train pipe is at 0" and engine reservoir falls to 0" (no pressure difference and therefore no brake application on the engine) the train will still be held by the brakes on the rest of the fitted stock. When running light or on a totally unfitted train you do not have this "backup" and it is advisable to apply the handbrake when stopping for any length of time as the train and pipe reservoir will slowly drain to 0", releasing the engine brakes.

You can manually release pressure from the brake reservoir using the reservoir drain valve next to the driver's front window or with the [ key.



**Note:** Some engines are only fitted with a steam brake and operate as below but without the need to empty the reservoir (as they do not have one).

The 9400 Pannier Tanks are also fitted with a steam brake which operates on the engine. This is controlled using the combination brake lever as follows:  
When a 9400 Pannier Tank is running light engine or unfitted one end of the vacuum hose will be left off (this happens automatically) allowing the steam brake to function instead of the vacuum brake. You will need to drop the pressure difference of the vacuum system to less than 10" by emptying the reservoir (as described above) at which point the steam brake will come into use. The steam brake applies braking when it is left of the central position and releases to the right - the release is extremely fast.

In Train Simulator there is no way for the engine to know what stock it is pulling so the 9400 Pannier Tanks use the player selected head code to indicate how much of the train is vacuum fitted.

The head codes and percentages are as follows and on changing lamps (see section on head code setting below) you will see a message describing the code and how much of the train is fitted with vacuum brakes.

So if you are pulling a passenger train (using head code A for example) then the brake simulation will use 100% of the length of the train to calculate how long it takes to gain and lose pressure in the train pipe.

- A: Express passenger 100%
- B: Stopping passenger 100%
- C: Parcels, perishables, etc. 100%
- D: Express freight 100%
- E: Express freight 50%
- F: Express freight 0%
- G: Light engine 0%
- H: Through freight or ballast 0%
- J: Through mineral or empty 0%
- K: Pick up/branch freight 0%



## 12. Whistles

Steam locomotive whistles are powered by steam from the boiler and are used to signal a train's approach, warn of danger and often to signify departure. The 9400 Pannier Tanks, like many GWR locomotives, have 2 whistles; the second being used to communicate messages to the guard of the train on freight services.

The main whistle is operated using the Space key, with a selection of short whistles by holding down Control, and a selection of long whistles by holding down Shift.

The B key operates the lower tone guard whistle.

Key: Space, B, Ctrl-Space, Shift-Space

Whistles were also used to communicate with signalmen, requesting clearance to go via certain tracks, etc. We have simulated this by adding a whistle sound when you use Tab and Ctrl-Tab to pass signals at danger. In truth there were dozens of whistle codes used for numerous request types however within the limitations of the game we have included a single long-short-short whistle to replicate this regularly used system.

### ***Advanced Mode***

If the train that you are driving has one or more brake vans in it and they are fitted with Victory Works "ActiveGuard" system then you can communicate with the guard in the van using the low-tone second whistle (B key).

To request the guard to put on the van's handbrake give him 3 short blasts on the second whistle. To request him to take off the handbrake give him 6 short blasts.





### 13. Handbrake

A hand operated screw that applies the brakes on the tender without the need to destroy the vacuum in the brake pipes.

Key: / (toggle on and off)



#### **14. Windows, Doors, Weather Panels and Roof Hatch**

Working in the cab of any steam locomotive is hot work. To aid in the comfort of the crew you can open the windows and the roof hatch. You can also slide the weather protection panels to keep out rain and wind as well as folding the driver's and fireman's seats away and opening the side and rear doors.

Click and drag with the mouse.

You can also turn the lamp on the shelf on and off using Ctrl + Numpad 5



### **15. Automatic Train Control (ATC)**

This system indicates a signal being either clear or at danger and issues a bell or buzzer tone to the locomotive crew. If a warning buzzer is heard it will need to be acknowledged or the brakes will be automatically applied.

If you are driving on an AWS-fitted route you will hear a bell ring if you pass a clear (green) signal. If you pass a signal at danger (red, yellow or distant red) a buzzer will sound and you will have 3.7 seconds to clear the warning or the train will be brought to a stop automatically.

Press the Q key or press down the lever on the side of the ATC box to acknowledge the warning.

Note: For AWS to function the route that the locomotive is running on needs to have been fitted with the relevant scenery markers.



## 16. Head Code Setting

The 9400 Pannier Tanks all have a standard GWR 4 lamp set up for the front and rear – 1 lamp at the top and 3 below – to show the standard GWR/BR head codes (see [Appendix 1](#)).

The codes can be preset using the scenario locomotive number or changed by the driver at any time.

You can show or hide each lamp by holding the Control key and pressing numbers 1 to 4 on the keypad.

The lamps are also intelligent in that they will not show for each end if something is coupled to the front or rear of the locomotive.

H and Shift H control the locomotive lights as follows:

- 0 – Lights off, forward running
- 1 – Lights on, forward running
- 2 – Lights on, reverse running

- 3 – Lights off, reverse running

Keys: H, Shift H, Ctrl + Numpad 1-4

The 9400 Pannier Tanks can be fitted with optional Headboards using the locomotive number and these can also be cycled by pressing Ctrl + Numpad 6

The preserved versions of 9466 can show a modern High Intensity lamp (position 3) instead of the historical lamp, and this can be activated by pressing Ctrl + Numpad 7



## Driving in Advanced Mode

### ***Advanced Mode ONLY***

The following is a summary of how to drive successfully in Advanced Mode. It does not contain hard figures – e.g. set the reverser at 25% and the regulator at 30% - as these are the things you will learn by driving the locomotive.

However there are some realistic features that are incorporated that require some specific knowledge for the best operation.

### ***Before You Start***

**Dampers** – Make sure you have the dampers set for running in the appropriate direction if the fire requires air. Cutting off the air is a good way to limit the boiler pressure from increasing when at a stand or running downhill (see [Controls Section 7](#)).

**Head Code** - Set the appropriate head code, this is required for the advanced brakes to work correctly (see [Controls Section 17](#)).

**Fire** – Assuming you are not using the auto-fireman and not about to run downhill for a long way you will want to start building the fire as soon as possible (see [Controls Section 5](#)).

**Gauge Glass Test** – If you have time at the start of a scenario then you can perform gauge glass blow down tests to pass the time (see [Controls Section 10](#)).

### ***Setting Off***

**Cylinder Cocks** – If you are just starting or have been stationary for a while, ensure that the cylinder cocks are open. As you drive off, listen for the change in pitch as the water empties or count 4 full revolutions of the wheels and then close them (see [Controls Section 3](#)).

**Wheel Slip** – In wet or icy conditions due to the accurate wheel slip and simulated steam chest you will need to use the regulator like a real driver would. Primarily on starting (when the reverser cut off is high) this means you must manage the steam entering the pistons to make sure that the power being applied to the rails does not exceed the amount of grip available.

If you open the regulator and just leave it open the pressure will continue to build as will the amount of power being applied to the rail. This will likely cause wheel slipping in any conditions but even more so when wet or icy.

As a real driver would you need to pump the regulator to gradually build the pressure in the cylinders as you accelerate. This means opening the regulator for a moment and then closing it again, the residual steam will continue to work and cause the locomotive to carry on accelerating. Continually doing this will allow the locomotive to build speed and pressure gradually and avoid wheel slip.

Once a slow speed is reached you can then leave the regulator open and accelerate and adjust as needed to maintain a constant speed.

The speed at which you can stop pumping varies and is based on how much grip is available – an icy rail will need a much higher speed to allow full power than a dry rail.

The weight of the consist will also affect how long it takes before this speed is reached (simply because a heavier load takes longer to accelerate) which means you are more likely to have to manage the wheel slip for longer, therefore making it more likely.

In summary, as you set off do not throw the regulator to full and leave it there! Pump it gradually, increasing the power slowly until you can leave the regulator open.

You will also need to be aware of the second valve on the regulator. When opening the regulator more than about halfway you will then need to fully open it before closing it shut. Otherwise the second valve will not close properly and you will have trouble closing the regulator completely – you will also experience a large burst of steam when you open it again if it was not properly closed first.

Be aware of the weather, a wet or icy rail provides a lot less grip.

This brings us to:

**Sander** – The sander helps to provide grip for the wheels on the rail and should be used when starting in wet or icy conditions (see [Controls Section 12](#)).

### *Under Way*

**Water Filling** – You will need to use the water levers and the injector steam levers to fill the boiler (see [Controls Section 9](#)).

Due to the water gauge glasses wobbling around and being effected by gradient and acceleration it is normal procedure to try and keep the boiler between half and three quarters full to avoid overfilling the boiler and causing priming to occur.





## Locomotive Numbering

When any locomotive is added to a scenario the number will be randomly chosen from a list of all members of the appropriate class and era selected.

These are preset with the correct configurations for each number as they were historically outfitted. However if you wish to change any of the components then the setups are listed below.

We have also created a simple app which allows you to build a loco number using a system of simple drop down menus and text boxes. Please see this page on our blog for details and a download link

<https://victoryworksts.blogspot.com/2019/01/victory-works-locomotive-number.html>

**GWR – 1947, 1948-9, Preserved** e.g. 9400SDN1UB0NYCNRNY

1. to 4. 4-digit locomotive number
5. to 7. 3 digit shed code
8. Company logo
  - **1** – G W R text (1947)
  - **2** – British Railways in GWR typeface (1948-49)
9. Power disc
  - **U**pper
  - **L**ower
  - **N**one
10. Safety bonnet
  - **B**rass
  - **P**ainted
11. Headboard
  - 0**. None
  - 1**. Royal Duchy
  - 2**. Mayflower
  - 3**. Cornish Riviera
  - 4**. Torbay Express
  - 5**. The Red Dragon
  - 6**. LU150
  - 7**. Santa Special
12. Whistle shield – **Y**es or **N**o
13. Steam Heat – **Y**es or **N**o
14. Chimney
  - **C**opper
  - **P**ainted
15. Speedometer – **Y**es or **N**o

## 16. Bunker steps

- Rear
- Side

## 17. R. Stephenson &amp; Hawthorns Build Plaque – Yes or No

## 18. Front valve end cover – Yes or No

Note: The preserved version has an additional option

## 19. Overhead Warning Labels – Yes or No

e.g. 9466SDN1UB0NYCNRNY

Head code (Optional) – Letter of the head code class (see [Appendix](#)), note: lower case for running tender first

**BR – 1949, 1950-56, 1956-65, Preserved** e.g. 941088B3LP0YYPNSNN

## 1. to 4. 4-digit locomotive number

## 5. to 7. 3 digit shed code

## 8. Company logo

- 1 – British Railways text
- 2 – Lion over wheel (1948-56)
- 3 – Lion holding wheel (1956-)

## 9. Power disc

- Upper
- Lower
- None

## 10. Safety bonnet

- Brass
- Painted

## 11. Headboard

- 0. None
- 1. Royal Duchy
- 2. Mayflower
- 3. Cornish Riviera
- 4. Torbay Express
- 5. The Red Dragon
- 6. LU150
- 7. Santa Special

## 12. Whistle shield – Yes or No

## 13. Steam Heat – Yes or No

## 14. Chimney

- Copper
- Painted

## 15. Speedometer – Yes or No

## 16. Bunker steps

- Rear
- Side

17. R. Stephenson & Hawthorns Build Plaque – Yes or No

18. Front valve end cover – Yes or No

Note: The preserved version has an additional option

19. Overhead Warning Labels – Yes or No

e.g. 946688B3LP0YYPNSNNY

Head code (Optional) – Letter of the head code class (see [Appendix](#)), note: lower case for running tender first



## Modification Policy

You are free to create modifications for this pack (including but not limited to reskins, sound updates, “enhancement” packs, etc.) but they must not include any 3D model files, audio samples or scripts – original or modified. If you choose to make your mods public then they **must be provided free of charge**. They can be hosted on a site that asks a nominal membership fee for quicker downloads (e.g. UK Train Sim) but **cannot be sold in any way** without the express permission of Victory Works.

If you wish to discuss terms for selling modifications please contact us via email at [victoryworks@live.co.uk](mailto:victoryworks@live.co.uk)

To summarise – free mods are fine but must not include model, audio or script files. If you wish to sell mods then you **MUST** get permission first.

## In Memory of Dennis

My heartfelt thanks to a former footplate crew of 9466 for the following quote in memory of Dennis Howells and for their invaluable knowledge during the creation of this locomotive. I hope we have done him proud.

*This Train Simulator Classic pack pays tribute to the memory of a man who has been extremely valuable to the preservation of GWR locomotives, not only for his meticulous and thorough efforts with restoring and maintaining 9466, but also his valuable knowledge which brought us the steam railmotor and other western engines. You were always in good hands with Dennis; his wicked smile will always be remembered.*



## Acknowledgements

We would like to thank the following people for their help during this project:

- Steam Sounds Supreme and the amazing QA testing group
- James Green for his working knowledge of 9466 and his lovely stories of crewing for Dennis

## Appendix: Head Codes

The following are the head code classes that you can set using the scenario numbering system.

### Class A

- Express passenger train.
- Breakdown van train going to clear the line, or light engine going to assist disabled train.
- Empty coaching stock timed at express speed.
- Express streamline railcar.



### Class B

- Ordinary passenger or mixed train.
- Branch passenger train.
- Breakdown train not going to clear the line.
- Rail motor car, auto-train or streamline railcar.



**Class C**

- Parcels, newspapers, meat, fish, fruit, milk, horse, cattle or perishable train composed entirely of vacuum fitted stock with vacuum pipe connected to the engine.
- Express freight, livestock, perishable or ballast. Train pipe with not less than one third of the vehicles vacuum fitted and pipe connected to the engine.

**Class D**

- Express freight, or ballast train conveying a stipulated number of vacuum braked vehicles connected by the vacuum pipe to the engine and authorised to run at a maximum speed of 35 mph.
- Empty coaching stock train (not specially authorised to carry "A" head code).



**Class E**

- Express freight, fish, fruit, meat, cattle or ballast train.
- Breakdown train not proceeding to an accident.



**Class F**

- Fast freight conveying through load, all unfitted.





### Class G

- Light engine or light engines coupled.
- Engine with not more than two brake vans.



### Class H

- Freight, mineral or ballast train or empty train carrying through load to destination.



**Class J**

- Freight, mineral or ballast train stopping at intermediate stations.



**Class K**

- Branch freight train.
- Freight or ballast train or officers special train requiring to stop in section.

