RAVEN Q6 (NER T2)

Contents

 Release Version 1.0

Introduction

Thank you for purchasing the Raven Q6 (NER Class T2) Add-on for Train Simulator.

We are proud to present every member of the Q6 class, in 10 liveries which cover their construction from 1913–1921 up to the current day, where a single member still runs as a preserved engine.
Working hard in the north east of England all 120 engines passed into British Railways ownership and many survived right up to 1967 and the end of steam in Britain.

As usual with our engines they come in simple, basic and advanced driving modes and can be driven using the F4 HUD, keyboard, mouse and/or X-Box or Steam controller.

Please read this manual thoroughly, especially to get the best from Advanced Mode and we hope you enjoy driving this Northern work horse.

All the best,
Victory Works

Click on the links below to read about future projects, see Work in Progress pictures and read more about the research, detail and passion that we put into our Train Simulator add-ons.

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Features

- Simple, standard and advanced driving modes
- Xbox controller support ***SIMPLE AND STANDARD MODES ONLY***

- Raven Q6 (NER Class T2) Locomotive
  - NER Early Lined Livery (Small number plate)
  - NER Late Lined Livery (Large number plate)
  - LNER Black livery
  - LNER Wartime Black Livery
  - LNER Post-War Black Livery
  - British Railways 1948-49 Livery
    - Clean and Dirty
  - British Railways 1950-56 Livery
    - Clean and Dirty
  - British Railways 1956-67 Livery
    - Clean and Dirty
  - Preserved NER Lined Livery
  - Preserved British Railways Livery
- Optional parts and fittings including steam heat dial, external vacuum brake pipe, 5 types of piston cap, overhead warning labels and 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 and reservoir vacuum 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) and roof hatch
- Dynamic lamp setting
- Cab light effects including flickering firebox glow

- Atmospheric AI effects

- Rolling stock
    - BR Conflat S
        - Empty
        - Dry ice containers
            - White
            - White with tarpaulin
            - Wood
            - Wood with tarpaulin
    - NER 20 ton Hopper
        - NER Grey
            - Empty
            - Coal
            - Coal Dust
        - BR Grey
            - Empty
            - Coal
        - BR Unpainted
            - Empty
            - Coal
    - NER 12 ton 6 Plank Wagon
        - NE Grey (Unfitted)
            - Empty
            - Heavy load with tarpaulin
            - Light load with tarpaulin
            - Ceramic pipes
            - Sacks
        - NE Oxide (Fitted)
            - Empty
            - Heavy load with tarpaulin
            - Light load with tarpaulin
            - Ceramic pipes
            - Sacks
            - Carboys
        - BR Grey (Unfitted)

- Empty
- Heavy load with tarpaulin
- Light load with tarpaulin
- Ceramic pipes
- Sacks

- BR Bauxite (Fitted)
  - Empty
  - Heavy load with tarpaulin
  - Light load with tarpaulin
  - Ceramic pipes
  - Sacks
  - Carboys

- NER 13 ton Steel Wagon
  - NE Grey (Unfitted)
    - Empty
    - Heavy load with tarpaulin
    - Light load with tarpaulin
    - Ceramic pipes
    - Sacks
  - NE Oxide (Fitted)
    - Empty
    - Heavy load with tarpaulin
    - Light load with tarpaulin
    - Ceramic pipes
    - Sacks
  - BR Grey (Unfitted)
    - Empty
    - Heavy load with tarpaulin
    - Light load with tarpaulin
    - Ceramic pipes
    - Sacks
  - BR Bauxite (Fitted)
    - Empty
    - Heavy load with tarpaulin
    - Light load with tarpaulin
    - Ceramic pipes
    - Sacks

- LNER/BR Brake Van
  - Dynamic lamps

- 6 scenarios for the Weardale & Teesdale Network Route Add-on
- 30 Quick Drive consists with appropriate stock

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Background

At the turn of the century the North Eastern Railway (NER) profited from a large upsurge in mineral traffic and although the older Worsdell Q5 locomotive met the initial increases it became clear that more locomotives were required. Sir Vincent Raven, Chief Mechanical Engineer of the NER, designed the Q6 using the best components of the Q5 design but fitting a larger boiler and a superheater which Raven had become convinced was a worthy addition after seeing them in service with the B15 class. The Q6 began life with a working pressure of 160 psi but this was soon raised to 180 psi.

The Q6's were an unqualified success and the combination of the Q5 piston valve motion and the Schmidt superheater created a strong and reliable locomotive that gave strong service throughout their lives.

They were initially allocated to sheds in the North East area for hauling coal from the colliery pits but by 1920 they had been displaced from the Shildon-Newport line by electric engines. At the Big Four grouping in 1923 they were allocated to the areas around Blaydon, Carlisle, Stockton, Newport, Darlington, Leeds, Selby and Tyne Dock and they were sometimes used for medium and long distance freight as well as the heavy mineral traffic that they had been designed for. During the LNER era they often ventured further afield to such places as Manchester (via the Woodhead Tunnel), Doncaster and after 1930 they even went north of the Tyne. In the 1940s they were seen as far south as Peterborough and March.

All 120 members of the Q6 class passed into British Railways ownership in 1948 and many of them continued working right up until the end of steam. During this time they carried on the same kind of work they had under the NER and LNER: heavy freight and mineral workings around the North East of England and they were frequently seen around the Darlington and Bishop Auckland area.

The last Q6's were withdrawn in 1967, however No. 3395 (63395 under BR) has survived into preservation and is usually running on the North Yorkshire Moors Railway. It was restored to running condition in 1970 when it had vacuum brake equipment fitted so it could haul passenger services and has proved more than capable of handling the NYMR's gradients.

Scenarios

6 career scenarios are included for the Weardale & Teesdale Network Route Add-on.

All liveries with light engine and appropriate freight consists are also available in Quick Drive.

Raven Q6: [1] Supplying the Power – 40 minutes
Monday 17th October 1949
1949 and the Big Four railways companies have been merged into a single nationalised entity, British Railways. However many engines still carry their older liveries and today you will be driving ex-LNER Q6, No. 3417 in its post-war LNER guise. You job is to collect coal dust from West Beecham Colliery and deliver it to Dunston Power Station in Gateshead to be burnt as fuel. The dust is transported in 20 ton wooden NER/LNER hoppers, tightly sheeted over to keep the powdered substance inside.

Raven Q6: [2] Water, water everywhere – 35 minutes
Tuesday 15th May 1956
Today you are driving Q6, No. 63351. Shedded at West Auckland (referred to as "Tindale" by the locals) she carries a white painted smoke box dart surround, given to all Tindale locomotives to help the shed recognise their own.
Currently waiting in a siding at Barnard Castle, your first job today is to deliver a churn of drinking water from Barnard Castle Station to the remote Coal Road signal box.

Raven Q6: [3] Ice Cold in... Penrith – 50 minutes
Thursday 30th June 1960
Today we are driving ex-NER Q6 No. 63416 as it pulls a train of dry ice containers carried on conflat wagons. Dry ice is Carbon Dioxide in a solid state and is used for many purposes; among them, packaging cold foods and rapid cooling in manufacturing processes.

Raven Q6: [4] Wearhead Goods, Part 1 – 75 minutes
Friday 30th September 1960
A wet Friday at Shildon and a goods train needs to be shunted and delivered to Wearhead. We are currently at Heighington and have just been given the road.

Raven Q6: [5] Wearhead Goods, Part 2 – 70 minutes
Friday 30th September 1960
Now the wagons have been shunted into order and moved to the main line it is time to take them to Wearhead. We will also be making a stop to deliver some of them at Frosterley.

Raven Q6: [6] Darlington Rail Tour – 65 minutes
Sunday 24th December 1967
It is Christmas Eve and today we will be driving recently restored Raven Q6 No. 2238 from Durham to Darlington on a special rail tour. Stopping at every station to Bishop Auckland we will then run non-stop to Darlington.

Control Modes

There are 3 ways to drive the Raven Q6 locomotive.

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 simulated steam chest and brake reservoirs. 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 A at any time and this will also turn it off again.

The ***Advanced Mode*** features are shown below for each control.

Performance Options

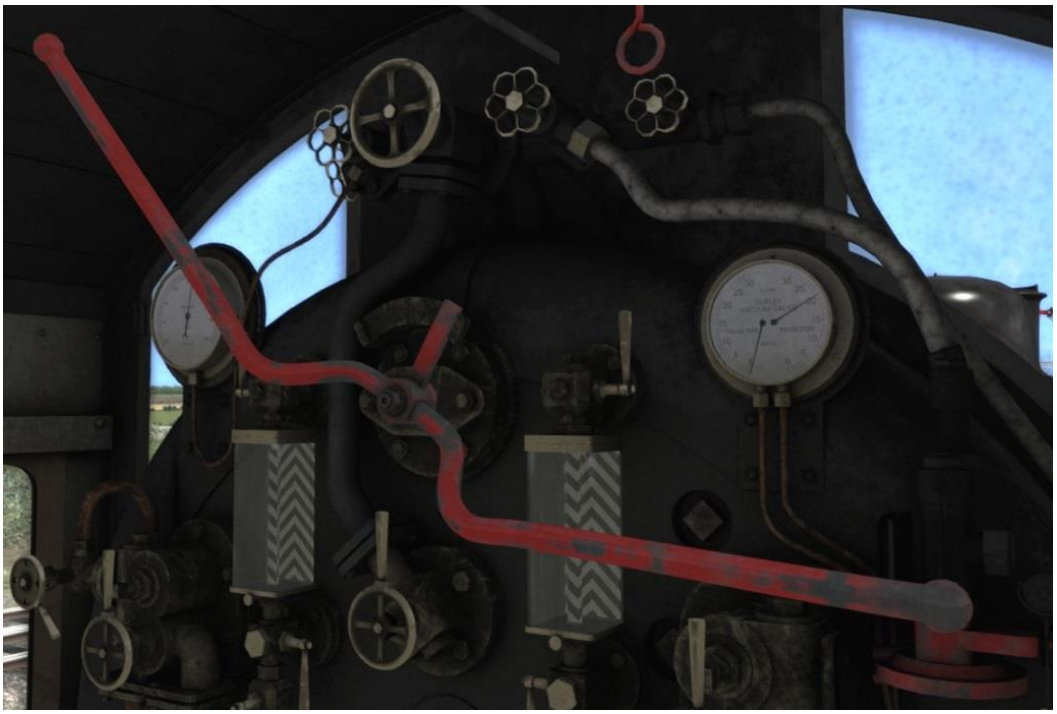
Based on feedback we have received on previous products we have added an option to turn off the additional shadow-casting light that is activated when the firebox door is opened. This can improve performance if you find a large FPS drop when opening the firebox. It does not affect the main firebox light, just the additional ambient one.

The light is on by default but you can toggle it off/on using Ctrl-L.

Driving Controls

Listed below are the controls available when driving the Raven Q6 locomotive in standard and advanced modes.

Also see the following section, “Driving in Advanced Mode” for additional information.



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.

2. Reverser

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.

The Q6 has a steam reverser which is operated by pushing the reverser lever up to increase the cut-off and down to decrease it. The current cut-off can be seen on the reverser plate in the right hand ledge.

Keys: W, S

Advanced Mode

In Advanced mode the steam reverser lever in the cab can only be pushed up which will increase or decrease the reverser position based on the directional lever on the right hand side of the cab. This directional lever can be toggled between forward and reverse manually or by pressing the E key.

Keys: E

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.

The amount of stationary time varies depending on the time of day (the assumption 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. Firebox

Ensure the firebox door is fully open to allow maximum stoking. A related tool is the shovel on the tender. When the firebox door is open, pull the shovel down to regulate the input of coal into the firebox.

Key: F
Keys: R, Shift R (stoking)

Advanced Mode

In advanced mode the Q6 features 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 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 completely.
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.

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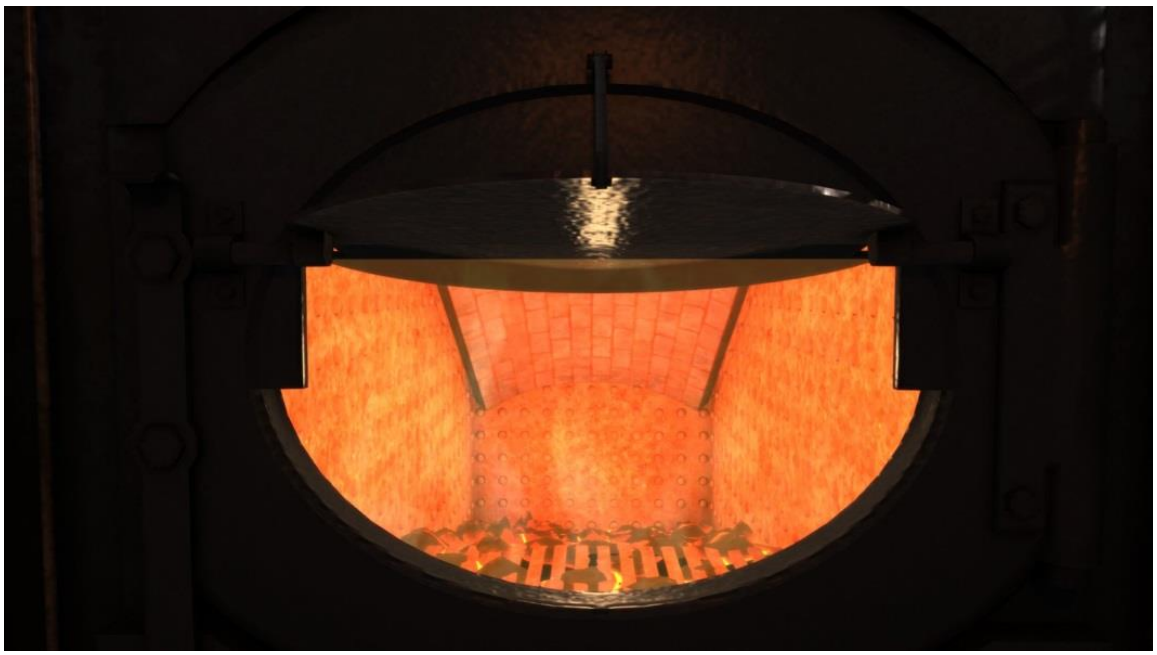
As an additional tool for those who like to drive with minimal or no HUD display the firebox and coal is fully modelled with a specific cab view for checking the fire mass.

The coal level is slightly exaggerated over its working range so it can be used as a visual indicator of when firing is needed. The coal level rises and falls gradually but the images below will help in visualising how this can help.



Coal level low *< 42% 688 lbs*
The grate can be clearly seen with a very small amount of coal.

Coal level average *70% 1147 lbs*
The grate is covered with the coal's centre on the 4th rivet down on the back wall.

Coal level high *> 84% 1377 lbs*
The grate is deeply covered with the coal white hot and up to the 3rd row of rivets on the back wall.

The shovel on the tender controls the stoking amount. Pulled fully down, stoking is at maximum.

5. 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

The boiler runs best at around 175 psi. At 180 psi the first safety valve will 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 at 182 psi. Both valves close again when the boiler is under 175 psi.

6. 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.

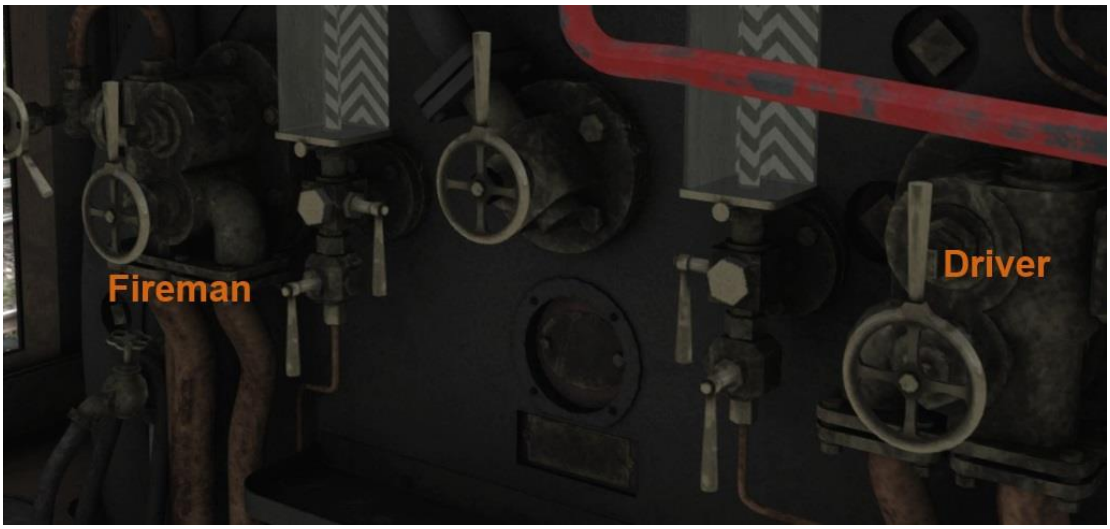
The damper has 3 notches: closed, half and full. It is fully open in the raised position.

Keys: M, Shift M

Advanced Mode

There are 2 damper levers; the left hand is the front damper and the right hand is the 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 door.



7. Driver's injector steam

This takes steam from the boiler and uses it to blast water from the tender into the boiler.

Key: I, Shift I

Fireman's injector steam

Key: O, Shift O

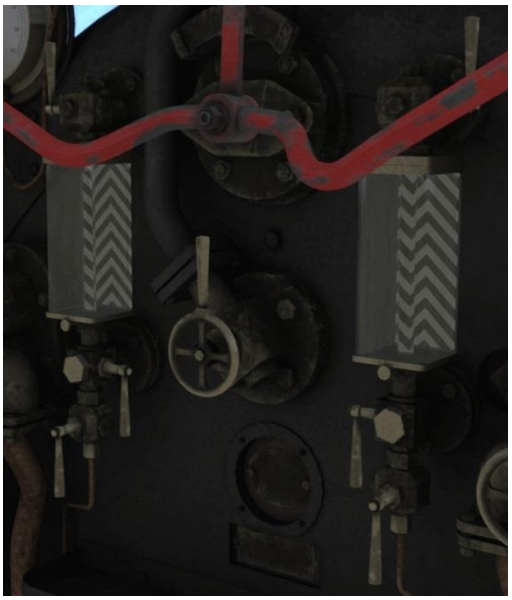
8. Driver's and Fireman's water taps

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.



9. Boiler Gauge Glasses

Attached to the boiler are strong glass tubes 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.

Overfilling the boiler past 102% will cause priming and water will be ejected from the chimney.

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. 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 blow down tests on the gauge glasses by doing the following:

1. Shut off the water supply to the top and bottom of the glass by pulling the levers down and up respectively.
2. Move the tap at the bottom of the gauge towards the centre of the cab, the water will empty from the glass.
3. Return the lever and taps to their previous positions by reversing the above process to refill the glass.

10. Vacuum Brake and Brake Pressure Gauge

The original Q6's were fitted with a train only steam brake. The preserved version also has a vacuum brake for use with passenger stock.

In basic mode the brakes are controlled by the brake lever and operate like a normal vacuum brake for both versions.

Keys: ' (apostrophe), ; (semicolon)

Advanced Mode

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Please note that although the original Raven Q6 had no vacuum brake fitted the underlying simulation still uses a vacuum brake for compatibility with steam-era Train Simulator stock.

Engine Brake

The engine braked locomotives use a single brake lever which applies proportional pressure based on how far it is pulled out. Fully in the brakes will be off, fully out the brakes will be completely on.

If you wish to use the F4 HUD for braking when playing in Advanced Mode you will need to switch the HUD lever to Engine Braking instead of Train Braking by clicking the button shown below.

Using the train brake control on the HUD will show a warning and will not apply the brakes.

Vacuum Brake

The preserved Raven Q6's require the use of the vacuum brake lever to release and apply the brake and the small ejector lever to maintain the vacuum. You will also need to be aware of the brake reservoir which is simulated.

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 now 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 19" or more, and fully released with a difference of approximately 4" or less.

However these systems are not airtight and therefore when leaks occur the train pipe and the reservoir (although leaking much slower than the train pipe) will trend towards 0”. The way to create a vacuum in both systems is to use the large ejector by pulling the brake lever down which will create a vacuum in the train pipe, and once the train pipe pressure reaches the same as the reservoir then an automatic valve will open and the reservoir pressure will increase as well.

The large ejector is steam powered and requires a pressure of at least 90 psi in the boiler so be careful to manage this properly or you may not be able to release the brakes.

In addition to the large ejector the Q6 also has a small ejector which can be used to counter leaks in the system. The small ejector can hold the vacuum and can even create vacuum in the train pipe albeit much slower than the large ejector.

Keys: Small Ejector - J, Shift J

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.

In Train Simulator there is no way for the engine to know what stock it is pulling so the Q6 uses the player selected head code to indicate how much of the train is vacuum fitted.

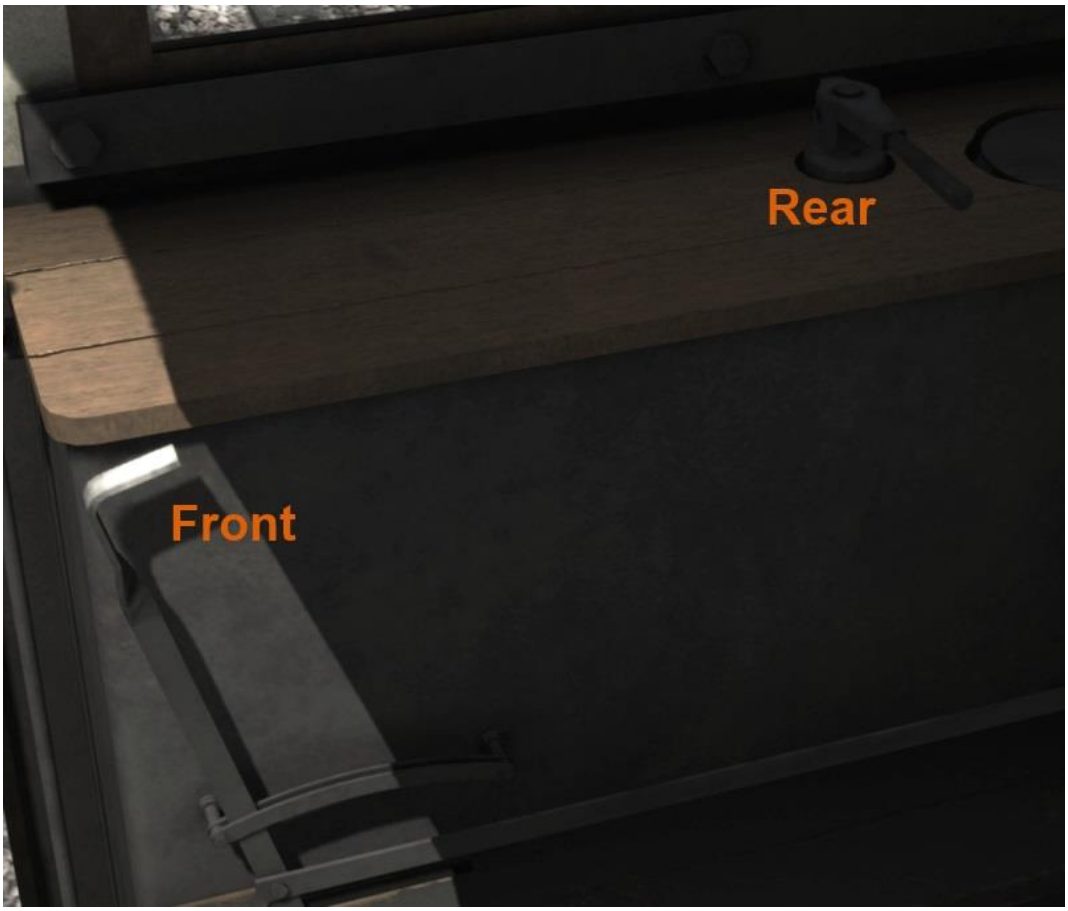
The head codes and percentages are as follows and on changing lamps (see section on head code setting below) you will see a message describing the code and how much of the train is fitted with vacuum brakes.

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 100% (can have 1 or 2 brake vans which would be fitted)
H: Through freight or Ballast 0%
J: Through mineral or Empty 0%
K: Pick up/Branch freight 0%

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.

Finally, although not required for standard operation you can manually release pressure from the brake reservoir using the Reservoir Drain Valve.



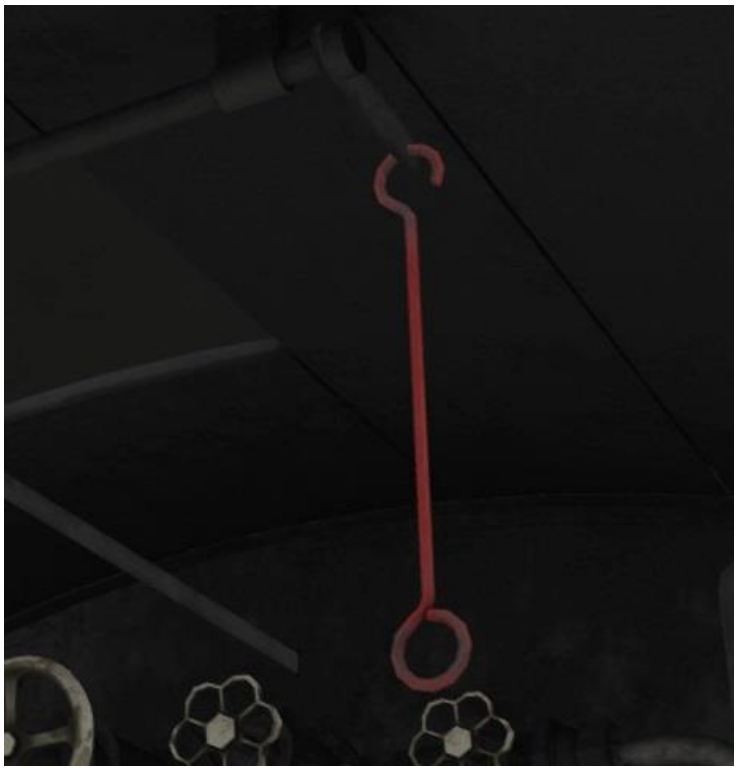
11. Sanders

The gravity sanders assist in starting and stopping the locomotive without the wheels slipping by placing sand on the rail in front of and behind the driving wheels. There are two sander levers, one on top of the left hand ledge (rear) and one on the side (front).

Keys: X, Shift X

Advanced Mode

Sand is essential in pulling away with minimal wheel slip in wet or icy conditions and you must make sure to use the correct sander for the direction of travel so sand is placed “in front” of the wheels.



12. Whistle

Steam locomotive whistles are powered by steam from the boiler and are used to signal a trains approach, warn of danger and often to signify departure.

Sampling the Q6 we found that the whistle was often quite “raspy” and so we have added a sample for this as well and it can be activated by using Ctrl-Space instead.

Key: Space, Ctrl-Space

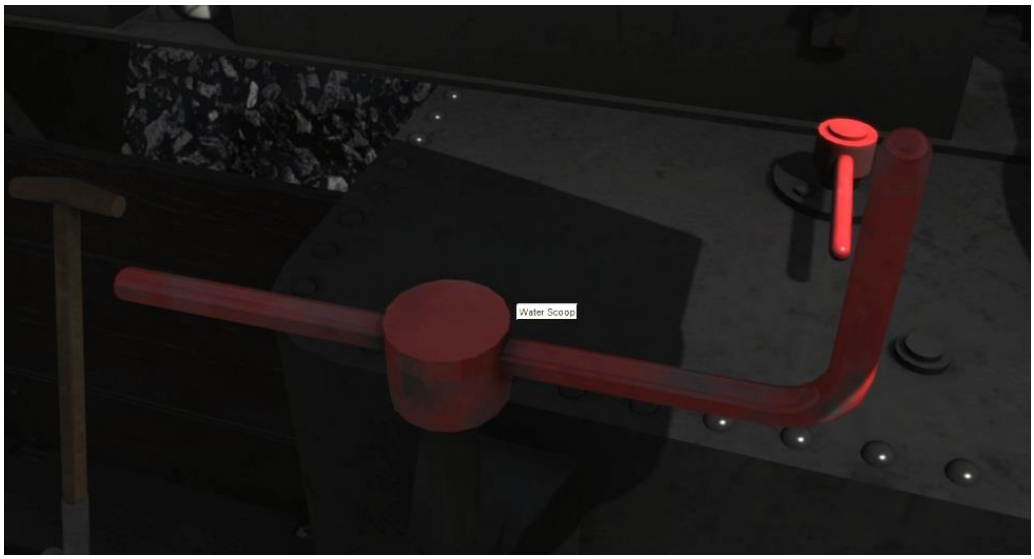
The Q6 also has a set of random short burst whistle sounds which can be activated by pressing the B key.

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.

13. Handbrake

A hand operated screw that applies the brakes to the locomotive and tender without the need to apply the engine brake.

Key: /



14. Water scoop

This lever operates a screw that raises and lowers the water scoop on the tender. This is used to fill the tender from water troughs in the track while travelling at speed.

Key: Ctrl-T

15. Windows and roof hatch

To provide ventilation for the crew or to protect them from the elements you can open and close the windows and the roof hatch. Click and drag with the mouse.

16. Tender logos and Overhead Warning labels

You can cycle through the available tender logos (BR engines only) by using Control and the number 5 on the number pad.

You can cycle through Overhead warning labels (appropriate liveries only) by using Control and the number 6 on the number pad.

All of these can also be set specifically using the locomotive scenario number (see Locomotive Numbering).

Keys: Ctrl + Number pad 5, 6

17. Head code and Lights

The Q6 has a standard BR 4 lamp set up for the engine and tender – 1 lamp at the top and 3 below – to show the standard BR head codes (see Appendix).

The codes can be pre-set 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 locomotive or tender.

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

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 6).

Head Code - If you wish to, set the appropriate head code (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 4).

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 9).

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.
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. And 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 11).

Under Way

Water Filling – You will need to use the water levers and the injector steam levers to fill the boiler (see Controls Section 7).
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 a Q6 is added to a scenario the number will be randomly chosen from a list of all 120 members of the class.

These are pre-set 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.

NER Early, NER Late and NER Preserved, e.g. 1247B3YYLJ

1 to 4. 4 digit locomotive number, e.g. 1247
5. Smokebox disc colour **B**lack/**W**hite
6. Piston Cap **1**, **2**, **3**, **4**, **5**
    1. Plain with centre boss
    2. Plain
    3. Plain with extended piston
    4. No cap, with centre boss
    5. No cap
7. NER Crest on sander box **Y**/**N**
8. Show Lining **Y**/**N**
9. Logo **L**/**N**
    - L – Lettering on tender
    - N – Engine number on tender
10. Head code – letter of the head code class (see Appendix)

LNER, LNER Wartime and LNER PostWar e.g. I247B3G

1 to 4. 4 digit locomotive number, e.g. I247 – for a number starting with 1 use I to achieve correct number spacing
5. Smokebox disc colour **B**lack/**W**hite
6. Piston Cap **1**, **2**, **3**, **4**, **5**
    1. Plain with centre boss
    2. Plain
    3. Plain with extended piston
    4. No cap, with centre boss
    5. No cap
7. Head code – letter of the head code class (see Appendix)

BR, BR Dirty and BR Preserved e.g. 6334051F1B1NG

1 to 5. 5 digit locomotive number, e.g. 63304
6 to 8. Shed code, e.g. 51F
9. Tender logo
    - **1** – British Railways text
    - **2** – Pre 1956 "Cycling Lion"
    - **3** – Post 1956 "Ferret and dartboard"
10. Smokebox disc colour **B**lack/**W**hite
11. Piston Cap **1**, **2**, **3**, **4**, **5**
    1. Plain with centre boss
    2. Plain
    3. Plain with extended piston
    4. No cap, with centre boss
    5. No cap
12. Overhead electric cable warning flashes
    - **N** – None
    - **R** – Red older style
    - **Y** – Yellow modern style
13. Head code – letter of the head code class (see Appendix)

Modification Policy

You are free to create modifications for this pack (including but not limited to re-skins, 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

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.

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Appendix: Head codes

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

Class A

Express passenger, newspaper, or breakdown train; express diesel car; snow plough on duty; light engine proceeding to assist disabled train.

Class B

Ordinary passenger, branch passenger or "mixed" train; rail motor (loaded or empty); ordinary passenger or parcels diesel car; breakdown train not on duty.

Class C

Parcels, fish, fruit, livestock, milk or other perishable train composed entirely of vehicles conforming to coaching stock requirements; empty coaching stock (not specially authorised to carry a class A code).

Class D

Express freight, livestock, perishable or ballast train with not less than 50 per cent vacuum braked vehicles piped to the engine.

Class E

Express freight, livestock, perishable or ballast train with 20 per cent vacuum braked vehicles piped to the engine.

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Class F

Express freight, livestock, or ballast train not fitted with continuous brake.

Class G

Light engine(s) with not more than two brake vans.

Class H

Through freight or ballast trains not running under class C, D, E or F conditions.

Class J

Mineral or empty wagon train.

Class K

Pick-up branch freight, mineral or ballast train.