

Train Sim World®

DIGITAL MANUAL





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Train Sim World is a First-Person Train Simulator that brings to life the experience of operating powerful and realistic trains on some of the World's most amazing railways. Using real world data to accurately replicate the performance, sounds and feel of real trains, drive real world inspired missions, run 24-hour timetables, relax as a passenger or watch trains go by, the possibilities are endless. Whether you're a beginner or a seasoned expert, Train Sim World caters for all abilities.



Train Sim World®: Northeast Corridor New York brings to life the experience of driving passenger and freight trains on the Northeast Corridor in New York. Transport passengers in the state-of-the-art Amtrak ACS-64 and serve the city in the CSX GP38-2 freight locomotive in and around New York.



Train Sim World®: Great Western Express brings to life the experience of driving high speed and commuter passenger trains

on one of Britain's busiest railways. Take control of the iconic Great Western Railways HST and command it to 125mph along the Great Western Main Line out of London's Paddington Main Line Station.



Train Sim World®: Rapid Transit brings to life the experience of driving rapid transit commuter passenger trains on one of Germany's most popular S-Bahn railways. Take control of the sleek DB BR 1442 'Talent 2' and transport passengers along the S-Bahn S2-Line through the historic and picturesque city of Leipzig.

Train Sim World Includes:

- Great Western Express, Rapid Transit and Northeast Corridor New York Routes
- Hundreds of miles of rail rendered in stunning detail throughout
- GWR BR Class 43 'HST', DB Schenker BR Class 66, GWR BR Class 166 'Networker Turbo Express', DB Mitteldeutschland BR 1442 'Talent 2' EMU, Amtrak ACS 64 'Cities Sprinter' and CSX GP38-2 locomotives and trains
- Highly authentic operating characteristics and interactive controls
- Accessible Tutorials for Beginners and Experts
- Several challenging scenarios showcasing the included trains and their real-world operations
- Complete 24-hour service timetable based on real-world operations

Introducing Train Sim World®: CSX Heavy Haul



Train Sim World®: CSX Heavy Haul is an all new First Person Simulator that brings to life the experience of operating powerful and heavy freight trains on one of America's most famous railroads.

Powered by Dovetail Games' new SimuGraph® vehicle dynamics engine and Unreal Engine 4® technology, Train Sim World uses real world data to accurately replicate the performance, sounds and feel of real trains. Master a range of diverse locomotives in a variety of activities from switching in busy yards to commanding heavy trains over steep grades. Catering for players of all ability levels with accessible tutorials for beginners and advanced procedures for experts.

An Introduction to Sand Patch Grade



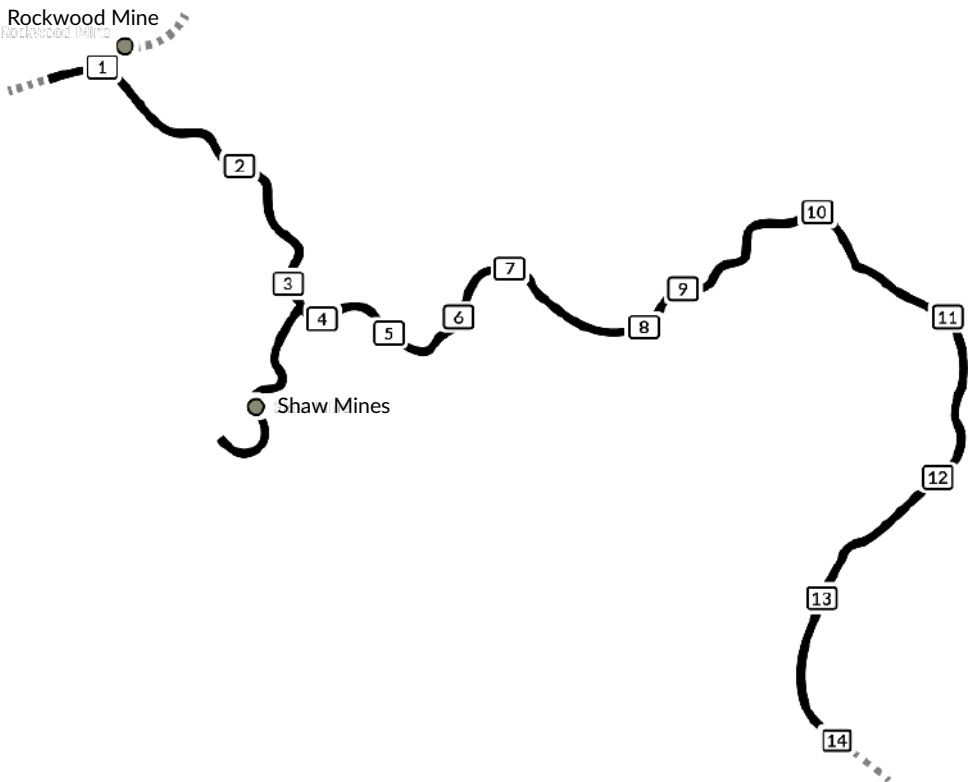
Sand Patch Grade, a vital link in the sprawling 21,000-mile rail system of CSX, crosses the Allegheny Mountains, climbing from Cumberland, Maryland (at an elevation of 627 feet above sea level) to the line's summit at Sand Patch, Pennsylvania (elevation, 2,258 feet), then beginning a westward descent to Rockwood, Pennsylvania (1,837 feet). To climb over the rugged Alleghenies, Sand Patch Grade's tough east slope ascent culminates with a 1.94 percent gradient near Manila, then a plunge through 4,475-foot-long Sand Patch tunnel.

It was the famed Baltimore & Ohio – America's first common-carrier railroad – that fathered Sand Patch, opening the line in the early 1870s as a key route west to Pittsburgh and, eventually, to America's railroad capital of Chicago.

Today, as CSX's Keystone Subdivision, Sand Patch Grade serves as a busy conveyor of diverse freight tonnage, including intermodal traffic, coal, coke, minerals, grain, steel, oil, autos and auto parts, and other manufactured products. Locally-originated coal tonnage is loaded at Rockwood on the adjoining S&C Sub and drawn from the Salisbury Branch. And Sand Patch Grade is also host to Amtrak's daily Washington (D.C.)-Chicago Capitol Limited.

Cumberland, Maryland, at the eastern foot of Sand Patch Grade, is home to a major CSX classification yard and engine terminal facilities.

Sand Patch Grade Route Map & Key Locations



| | | | |
|---|--------------------|----|-------------|
| 1 | Rockwood | 8 | Roddy |
| 2 | Garrett | 9 | Glencoe |
| 3 | Salisbury Junction | 10 | Fairhope |
| 4 | Meyersdale | 11 | Hyndman |
| 5 | Keystone | 12 | Cooks Mills |
| 6 | Sand Patch | 13 | Ellerslie |
| 7 | Mance | 14 | Cumberland |

The Game Modes

Tutorials

From Yard Switching to Refuelling, from Loading Coal to Braking, Tutorials gives you the knowledge you need to get the most from your locomotives and trains via interactive lessons that teach you key concepts. If you're new to Train Sim World, we recommend you start here to learn the fundamentals.



Scenarios

Provides a selection of operations over the Sand Patch Grade route, Scenarios are objective based activities which provides unique experiences. Put your skills to the test mastering the busy Cumberland Yard or challenge your mettle by powering heavy freight over Sand Patch Summit.



Services

Provides a host of activities throughout an entire 24-hour time period, Service Mode is a new way to play. There's always something to do with a large variety of services to take control of or ride along with. Sit back and enjoy the action and capture amazing screenshots, hop on or off and ride along with the various services as they go about their duties or take control and carry out the duties yourself.



Basic Terminology

Long Hood vs Short Hood

Short Hood



On a US Locomotive, the term “Long Hood” refers to the large portion that you might normally consider to be the rear. The “Short Hood” refers to the short portion that you might normally consider to be the front. They are not simply called “Front” and “Rear” because in some cases, US locomotives are the other way around - with the front being the Long Hood. It is therefore important that you understand and use the correct terms to avoid confusion.

Multiple Unit Working / Working in Multiple

Multiple Unit Working or Working in Multiple is a system of operation where two or more locomotives are connected in a train consist and operated from the Lead Locomotive (the locomotive at the front or head end) by a single crew. Locomotives working in multiple may be all at one end of the train, split throughout the train or at the front and rear of the consist.

In most cases, Multiple Unit Working means that you can distribute the hauling load between the multiple locomotives in the consist allowing for greater tractive effort overall and therefore, greater pulling and stopping power.

An Introduction to the EMD GP38-2

The Electro-Motive “Geep” first appeared on the North American railroad scene in 1949, in the form of the classic GP7. Over the following decades, more than 20 different variations of iconic “Geeps” were produced by Electro-Motive, and among the most successful and versatile of this landmark line of locomotives has been the GP38-2.

Produced between 1972 and 1986, the 16-cylinder, 2,000-horsepower, four-axle (B-B) GP38-2 garnered 2,222 sales to more than 60 original buyers. Like the SD40-2, the GP38-2 was ending production at the same time today’s CSX was being formed, but nonetheless CSX became a major operator of the type by inheriting the GP38-2 fleets of four predecessor roads. The venerable and versatile GP38-2 carries on today as a key locomotive in CSX’s modern-day locomotive fleet and, in fact, is having its life extended via the railroad’s rebuilding programs.



Starting the EMD GP38-2 Locomotive

1. Set the **Handbrake**, you'll find the handbrake wheel or lever at the short hood end of the locomotive.
2. Enter the cab and open the fuse box
3. Check that the main breaker and all fuses are switched to the on position and close the fuse box door.
4. Above the fuse box, set the **Start/Run Switch** to the Start position
5. Turn on the **Engine Room Light, Platform Lights and Cab Light** if required
6. Ensure the **Reverser** and **Throttle** are at neutral positions
7. Proceed to the long hood end of the locomotive and open the **Latch** (upper right of the engine room door) and then open the **Engine Room Doors**
8. Move and hold the **Prime/Start Switch** to the **LEFT (Prime)** for 5 seconds
9. Release the **Prime/Start Switch** and then move it to the **RIGHT (Start)** momentarily to trigger the engine start
10. Await the engine start to complete
11. Close the **Engine Room Doors** (note they must be closed in the right order!)
12. Return to the cab and set the **Start/Run Switch** to the **Run** position
13. Turn off the **Engine Room Lights** if you turned it on
14. Turn on the **Number Lights** as appropriate
15. Sit in the engineer's seat
16. At the top right of the main control stand (your left), you will see three switches labelled **Engine Run, Generator Field and Control & Fuel Pump**, set all three switches to the on position (or upward)
17. Turn on the **Ditch Lights, Gauge Lights** and set **Headlights** to bright
18. Check the brake stand and ensure the **Cut-Off Valve** is set to **Freight**
19. Check the **MU-2A Valve** and ensure it is set to **Lead or Dead**

A cold and dark locomotive starts with no air in the brake pipe, so this must now be pressurised.

1. Leaving the **Reverser** in neutral, move the **Throttle** to **Notch 1**. You will hear the engine rev up and on the left-hand gauge of the two brake gauges, you should see the red needle (denoting the Main Reservoir pressure) rising, and on the right-hand gauge, the red needle (denoting the Brake Cylinder pressure) also rising as the air is immediately fed into the locomotive's brake system. Wait for the Main Reservoir to reach 140psi.
2. Check that the **Independent Brake** is set to its maximum setting (Full Application).
3. Release the **Automatic Brake**, you should now see the white needle in the left-hand gauge (denoting the Equalising Reservoir pressure) rise, and the white needle in the right-hand gauge (denoting the Brake Pipe pressure) rise behind it. Once both of these needles reach 90psi, the air brake system is ready for service.
4. Move the **Throttle** back to **Notch 0**.
5. Step out to the front of the locomotive and release the **Handbrake**.

The locomotive is now ready for operation by setting the **Reverser** to your intended direction of travel. All you need to do now is release the **Independent Brake** and apply throttle as required.

Setting up the EMD GP38-2 for Multiple Unit Working

As MU Lead

Ensure the locomotives have been fully set up as per the EMD GP38-2 start-up instructions if required. Once the locomotives are operational then you can set them up for Multiple Unit working.

The start-up instructions will set the locomotive up to be suitable for leading a consist or being the sole locomotive in a consist.

The key settings to be aware of, should you need to change a locomotive from trailing back to lead are as shown below.

These three switches enable the power controllers (e.g. Throttle) to work:

| | |
|---------------------------------|----|
| Engine Run: | ON |
| Generator Field: | ON |
| Control & Fuel Pump: | ON |

These three valves control whether the brake handles operate the brakes on the train:

| | |
|-----------------------------|--------------|
| Brake Cut-off Valve: | FREIGHT |
| MU-2A Valve: | LEAD OR DEAD |

As MU Trail

When setting up the EMD GP38-2 in a non-lead position you have several options depending on which role you want it to play in the consist:

No Power, No brakes or "Dead in Tow"

This is useful if you are towing a completely cold and dark locomotive. In this instance, set the control stand up as follows:

| | |
|---------------------------------|--------------|
| Engine Run: | ON |
| Generator Field: | ON |
| Control & Fuel Pump: | ON |
| Brake Cut-off Valve: | CUT-OUT |
| MU-2A Valve: | LEAD OR DEAD |

***Note:** If the locomotive engine is not started then the first three switches are not important. However, if the engine is running and you just want it to sit in idle, then*

setting them to ON means they will ignore all signals from the lead locomotive and remain in idle.

No Power, Full Brakes

| | |
|---------------------------------|---------------|
| Engine Run: | ON |
| Generator Field: | ON |
| Control & Fuel Pump: | ON |
| Brake Cut-off Valve: | CUT-OUT |
| MU-2A Valve: | TRAIL 6 OR 26 |

In this configuration, the power controls in the locomotive have control over the engine so the lead unit will not be able to operate it remotely. This will mean that it remains at idle and does not contribute any power to the consist. The brake settings cut out the brake handle and set it up to be driven by a connected unit in the "Lead or Dead" configuration (which your lead unit should be set to). This means the locomotive will supply additional brake force to your train.

Power and Full Brakes

| | |
|---------------------------------|---------------|
| Engine Run: | OFF |
| Generator Field: | OFF |
| Control & Fuel Pump: | OFF |
| Brake Cut-off Valve: | CUT-OUT |
| MU-2A Valve: | TRAIL 6 OR 26 |

In this configuration, we disable the control stand for the power controls which will allow the lead unit to have full control over the power on this locomotive. As the lead unit applies throttle positions so the internal electronics of this locomotive's stand will do the same. Brakes are also set up to be managed by the lead unit.

Distributed Power

When you have a consist set up with locomotives that are not directly connected, such as when you have a locomotive set at the front and another set at the rear. This requires a slightly different configuration to ensure that all locomotives function correctly in the consist. The Radio is therefore used to operate the rear locomotive.

If you have an example consist with a pair of EMD GP38-2s at the front and a pair of EMD GP38-2s at the rear, you would need to set up as follows:

Front Pair

| | |
|-----------------------|--|
| Lead Unit: | Set up as Lead and ensure the radio fuse is on |
| Trailing Unit: | Set up as Trail |

Rear Pair

| | |
|-----------------------|--|
| Lead Unit: | Set up as Lead and ensure the radio fuse is on |
| Trailing Unit: | Set up as Trail |

In this configuration when the engineer makes a throttle or brake change on the front pair lead unit, the front trailing unit will respond because it is physically connected. At the same time, a radio message is sent (this is not audible to the player) which the rear pair lead unit will react to and will follow the same settings. This will then be automatically reflected on the rear pair trailing unit through its direct connection. This system is intended to mimic the behaviour of a second engineer in the rear pair leading unit that is following the actions of the lead engineer.

When set up in this way, the engineer at the front of the train has full control over all four locomotives simultaneously.

Setting up the EMD GP38-2 Multiple Unit Lighting Controls

The EMD GP38-2 has a switch on the wall behind the engineer's seat that has four settings. These allow you to set up the way the headlights will work on the other locomotives in the consist.



Single Unit or Intermediate Unit

In this setting, the locomotive will not react to headlight instructions coming from other locomotives in the consist. The headlights, if required, must be set up using the normal switches on the control stand.

Controlling with Unit Coupled at Long Hood End

Use this setting if this locomotive is the controlling unit for the lighting configuration (usually this would be the lead locomotive), and the next unit in the consist is coupled to this locomotive's long hood end.

Controlling with Unit Coupled at Short Hood End

Use this setting if this locomotive is the controlling unit for the lighting configuration (usually this would be the lead locomotive), and the next unit in the consist is coupled to this locomotive's short hood end.

Controller from Another Unit Coupled at Either End

If this unit should respond to lighting commands from a controlling unit then use this setting.

When the lighting is set up correctly, this means that the engineer can use the front and rear headlight controls on their lead locomotive control stand and it will correctly operate the lights on the locomotives in the consist.

Example

Trailing Unit #2
Controlled from another
unit coupled at either end

Trailing Unit #1
Single or
Intermediate unit

Lead Unit
Control Unit, with unit
coupled at Long End



In this example, the light switches are set up as described in this three-locomotive consist.

Once done, the engineer can sit in the lead unit and if he operates the front light switch, the lead unit lights will come on as expected. If he operates the rear locomotive light switch, rather than the lights on the rear of the lead unit coming on, the lights on the short hood of Trailing Unit #2 will come on remotely.

An Introduction to the EMD SD40-2

The 3,000-horsepower, six-axle (C-C) SD40-2, as part of Electro-Motive's "Dash 2" line, made its debut in 1972. Through 1986, Electro-Motive produced nearly 4,000 SD40-2s, making the locomotive one of the most successful diesel locomotives of all time.

Powered by EMD's reliable two-cycle, 645-series diesel power plant, and well-suited to virtually any type of mainline service, from fast intermodal duty to lugging heavy coal tonnage, the SD40-2 was purchased by more than 30 railroads, including giants Burlington Northern, Union Pacific, and CP Rail. During the time the SD40-2 was in production, CSX did not yet exist, but CSX's predecessors were active buyers. Thus, with the creation of CSX in 1986 and its acquisition of half of Conrail in 1999, CSX came to own more than 300 SD40-2s. Today, the venerable EMD SD40-2 remains a front-line locomotive for CSX, found across its system (and frequently on Sand Patch Grade) handling duties ranging from heavy haul to totting priority auto traffic.



Starting the EMD SD40-2 Locomotive

1. Set the **Handbrake**. You'll find the handbrake wheel at the short hood end of the locomotive.
2. Enter the cab and open the fuse box
3. Check that the main breaker and all fuses are switched to the on position and close the fuse box door.
4. Above the fuse box, set the **Start/Run Switch** to the Start position
5. Turn on the **Engine Room Light, Platform Lights and Cab Light** if required
6. Ensure the **Reverser** and **Throttle** are at neutral positions
7. Proceed to the long hood end of the locomotive and open the Latch (upper right of the engine room door) and then the **Engine Room Doors**
8. Move and hold the **Prime/Start Switch** to the **LEFT (Prime)** for 5 seconds
9. Release the **Prime/Start Switch** and then move it to the **RIGHT (Start)** momentarily to trigger the engine start
10. Await the engine start to complete
11. Close the **Engine Room Doors** (note they must be closed in the right order!)
12. Return to the cab and set the **Start/Run Switch** to the Run position
13. Turn off the **Engine Room Lights** if you turned them on
14. Turn on the Number Lights as appropriate
15. Sit in the engineer's seat
16. At the top right of the main control stand (your left), you will see three switches labelled **Engine Run, Generator Field and Control & Fuel Pump**, set all three switches to the on position (or upward)
17. Turn on the **Ditch Lights, Gauge Lights** and set **Headlights** to bright
18. Check the brake stand and ensure the **Cut-Off Valve** is set to **Freight**
19. Check the **MU-2A Valve** and ensure it is set to **Lead or Dead**

A cold and dark locomotive starts with no air in the brake pipe, so this must now be pressurised.

1. Leaving the **Reverser** in neutral, move the **Throttle** to **Notch 1**. You will hear the engine rev up and on the left-hand gauge of the two brake gauges, you should see the red needle (denoting the Main Reservoir pressure) rising, and on the right-hand gauge, the red needle (denoting the Brake Cylinder pressure) also rising as the air is immediately fed into the locomotive's brake system. Wait for the Main Reservoir to reach 140psi.
2. Check that the **Independent Brake** is set to its maximum setting (Full Application).
3. Release the **Automatic Brake**, you should now see the white needle in the left-hand gauge (denoting the Equalising Reservoir pressure) rise, and the white needle in the right-hand gauge (denoting the Brake Pipe pressure) rise behind it. Once both of these needles reach 90psi, the air brake system is ready for service.
4. Move the **Throttle** back to **Notch 0**.
5. Step out to the front of the locomotive and release the **Handbrake**.

The locomotive is now ready for operation by setting the **Reverser** to your intended direction of travel. All you need to do now is release the **Independent Brake** and apply throttle as required.

Setting up the EMD SD40-2 for Multiple Unit Working

As MU Lead

Ensure the locomotives have been fully set up as per the EMD SD40-2 start-up instructions if required. Once the locomotives are operational then you can set them up for Multiple Unit working.

The start-up instructions will set the locomotive up to be suitable for leading a consist or being the sole locomotive in a consist.

The key settings to be aware of, should you need to change a locomotive from trailing back to lead are as shown below.

These three switches enable the power controllers (e.g. Throttle) to work:

| | |
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| Engine Run: | ON |
| Generator Field: | ON |
| Control & Fuel Pump: | ON |

These three valves control whether the brake handles operate the brakes on the train:

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| Brake Cut-off Valve: | FREIGHT |
| MU-2A Valve: | LEAD OR DEAD |

As MU Trail

When setting up the EMD SD40-2 in a non-lead position you have several options depending on which role you want it to play in the consist:

No Power, No brakes or "Dead in Tow"

This is useful if you are towing a completely cold and dark locomotive. In this instance, set the control stand up as follows:

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***Note:** If the locomotive engine is not started then the first three switches are not*

important. However, if the engine is running and you just want it to sit in idle, then setting them to ON means they will ignore all signals from the lead locomotive and remain in idle.

No Power, Full Brakes

| | |
|---------------------------------|---------------|
| Engine Run: | ON |
| Generator Field: | ON |
| Control & Fuel Pump: | ON |
| Brake Cut-off Valve: | CUT-OUT |
| MU-2A Valve: | TRAIL 6 OR 26 |

In this configuration, the power controls in the locomotive have control over the engine so the lead unit will not be able to operate it remotely. This will mean that it remains at idle and does not contribute any power to the consist. The brake settings cut out the brake handle and set it up to be driven by a connected unit in the "Lead or Trail" configuration (which your lead unit should be set to). This means the locomotive will supply additional brake force to your train.

Power and Full Brakes

| | |
|---------------------------------|---------------|
| Engine Run: | OFF |
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Front Pair

Lead Unit: Set up as Lead and ensure the radio fuse is on
Trailing Unit: Set up as Trail

Rear Pair

Lead Unit: Set up as Lead and ensure the radio fuse is on
Trailing Unit: Set up as Trail

In this configuration when the engineer makes a throttle or brake change on the front pair lead unit, the front trailing unit will respond because it is physically connected. At the same time, a radio message is sent (this is not audible to the player) which the rear pair lead unit will react to and will follow the same settings. This will then be automatically reflected on the rear pair trailing unit through its direct connection. This system is intended to mimic the behaviour of a second engineer in the rear pair leading unit that is following the actions of the lead engineer.

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Controlling with Unit Coupled at Long Hood End

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Controlling with Unit Coupled at Short Hood End

Use this setting if this locomotive is the controlling unit for the lighting configuration (usually this would be the lead locomotive), and the next unit in the consist is coupled to this locomotive's short hood end.

Controller from Another Unit Coupled at Either End

If this unit should respond to lighting commands from a controlling unit then use this setting.

When the lighting is set up correctly, this means that the engineer can use the front and rear headlight controls on their lead locomotive control stand and it will correctly operate the lights on the locomotives in the consist.

Example

Trailing Unit #2
Controlled from another
unit coupled at either end

Trailing Unit #1
Single or
Intermediate unit

Lead Unit
Control Unit, with unit
coupled at Long End



In this example, the light switches are set up as described in this three locomotive consist.

Once done, the engineer can sit in the lead unit and if he operates the front light switch, the lead unit lights will come on as expected. If he operates the rear locomotive light switch, rather than the lights on the rear of the lead unit coming on, the lights on the short hood of Trailing Unit #2 will come on remotely.

Operating the Alerter on the EMD SD40-2 & EMD GP38-2

The Alerter is a simple system that is designed to require the engineer to respond to an alarm at regular intervals to ensure they are still in control of the locomotive. Failure to respond in a timely manner will cause the locomotive to cut power and apply full brakes and bring the train to a stop.

By default, in Train Sim World: CSX Heavy Haul, the Alerter is disabled. To enable it either press **CTRL + NUMPAD ENTER** on your keyboard (while sat in the engineer's seat) or open the fuse cabinet and turn the "Warning Devices" fuse on.



When the Alerter is enabled, if you are travelling at over 5mph it will begin a countdown from 65 seconds (there is no visual representation for this). Once that countdown reaches zero it will make a sound in the cab and turn an indicator on. On the HUD, you will also see the Alerter icon light up.

Once this has happened you have 5 seconds to respond before the control system takes over and stops the train.

To acknowledge the Alerter press the Acknowledge button on the control stand, the **Q key** on your keyboard or the **B button** on your Xbox controller. Any time you move any of the primary controls such as throttle, brake, reverser or operate the horn etc. the timer will also reset, so while you're actively controlling the locomotive you will likely not hear any alarms from the Alerter at all.

If you fail to respond in a timely manner to the Alerter, the brakes will apply and bring the train to a stop. After the brakes have been applied you will need to wait for the train to stop and then perform the PCS reset procedure (next page) before you can proceed again.

On the EMD GP38-2 the process and procedure is identical, but the in-cab alarm looks very slightly different, combining the Alerter indicator with other indicators.



Resetting PCS Application on the EMD GP38-2 & EMD SD40-2

When the Pneumatic Control Switch (or PCS) is open, the train brakes cannot be released and the throttle controls are deactivated. To operate your train again you must reset the PCS.

You can tell if it is activated by looking for the PCS OPEN light being illuminated:



Once the train has come to a complete stop, follow these steps:

If there is an alarm such as the Alerter sounding, acknowledge it (Q Key, B button on your controller).

1. Set the **Throttle to Idle**
2. Set the **Reverser to Neutral**
3. Set the **Independent Brake to Full Service**
4. Set the **Automatic Brake to Emergency**
5. **Wait for 60 seconds**
6. Release the **Automatic Brake** and wait for the Equalising Reservoir / Brake Pipe to return to 90psi

While the **Automatic Brake** is releasing, you will need to put the **Throttle** in to **Notch 1** so that the compressor can recharge the Main Reservoir.

Once the Equalising Reservoir and Brake Pipe needles have returned to 90psi, and the main reservoir has recharged to 140psi, put the **Throttle** back to **Idle**.

You should now be able to release the Independent Brake, set the Reverser and apply Throttle.

An Introduction to the GE AC4400CW

The benchmark for modern railroad freight motive power in North America today is 4,000+ horsepower, A.C. traction, and six axles – and it was largely the landmark General Electric AC4400CW, introduced in 1993, that helped establish that standard.

Constructed at General Electric's Erie (Pennsylvania) manufacturing facility and powered by GE's efficient and proven 16-cylinder, four-cycle FDL-series power plant, the 4,400-horsepower AC4400CW quickly became a successful railroad workhorse nationwide, with more than 2,500 units produced through 2004. Among the largest users of the AC4400CW is CSX, which operates a fleet of more than 600 of the powerful locomotives system-wide. Put to work in all types of mainline service, the big GE diesels, which weigh in at over 400,000 pounds, regularly can be seen hauling tonnage over the Alleghenies and across famed Sand Patch Grade.



Starting the GE AC4400CW Locomotive

1. Ensure the **Handbrake** is set on the left at the long hood end of the locomotive
2. Enter the cab and set the **Engine Control Switch** to the **Start position**
3. Press the **Engine Start** button and await the engine start to complete
4. Move the **Engine Control Switch** to the **Run** position
5. Turn on the **Front Number Lights**
6. Sit in the engineer's seat
7. Press the **Left Arrow Key** on your Keyboard once to focus on the engineer's **Primary IFD**
8. Press "1" on the IFD keypad to select the Air Brake Setup screen
9. The correct settings are:

Feed Valve: 90psi (use F1/F2 on the IFD Keypad to adjust if needed)

Auto Brake: Cut in (use F3 on the IFD Keypad to toggle if needed)

Independent Brake: Lead (Use F4 on the IFD Keypad to toggle if needed)

10. If you made any changes, press **F6** on the IFD Keypad to make those changes active
11. Press **F8** on the IFD Keypad to come out of the Air Brake Setup screen
12. Press the **Left Arrow Key** on your Keyboard **twice** more to get to a switch panel down by the left of the engineer's leg
13. Set the three switches labelled **Engine Run, Gen Field and Control** to the on position (or upward)
14. Turn on the **Gauge Lights**
15. Press the **Right Arrow Key** on your keyboard **three** times to return to the main engineer's camera view
16. Ensure the main reservoir is reading 140psi on the engineer's IFD
17. Ensure the **Independent Brake** is applied fully
18. Release the **Automatic Brake** and wait for the BP (Brake Pipe) and ER

(Equalising Reservoir) to fully pressurise to 90psi.

19. Ensure that the BC (Brake Cylinder) is reading at least 50psi, if it is below this, the brakes are not properly on and you should check the **Automatic Brake** handle position.
20. Move again to the long hood end of the locomotive and release the Handbrake
21. Return to the cab and set the **Headlights** to **Bright Aux**

The locomotive is now ready for operation by setting the **Reverser** to your intended direction of travel. All you need to do now is release the **Independent Brake** and apply throttle as required.

Setting up the GE AC4400CW for Multiple Unit Working

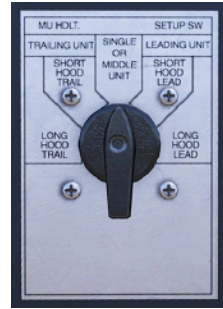
The same rules and settings apply to the GE AC4400CW as for the EMD SD40-2 and EMD GP38-2.

For the brake configuration, you should use the 1 key on the engineer's IFD Keypad to select the Air Brake Setup screen and select the appropriate setup. Once complete, press the F6 key to save the changes.

The Engine Run, Gen Field and Control switches perform the same tasks as on the EMD SD40-2 and must be set up following the same rules as the EMD SD40-2 on each locomotive in the consist.

Setting up the GE AC4400CW Multiple Unit Lighting Controls

The GE AC4400CW has slightly different controls to the EMD SD40-2 and EMD GP38-2, with a five-position switch on the wall behind the engineer's seated position.



If this unit is a lead unit, then set it to either

Short Hood Lead

If the short hood of the locomotive is outward facing and should have its lights operated.

Long Hood Lead

If the long hood of the locomotive is outward facing and should have its lights operated.

If this unit is trailing, then set it to either:

Short Hood Trail

If the short hood of the locomotive is outward facing and should have its lights operated.

Long Hood Trail

If the long hood of the locomotive is outward facing and should have its lights operated.

Otherwise, if the unit is on its own or in the middle of a consist, set it to Single or Middle unit.

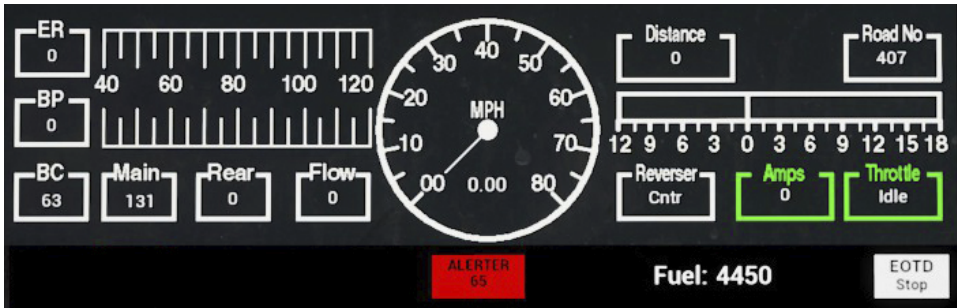
In the EMD SD40-2 and EMD GP38-2 examples, if those locomotives were replaced with GE AC4400CWs then they would be defined as follows:

| | |
|--------------------------|-----------------------|
| Lead Unit: | Short Hood Lead |
| Trailing Unit #1: | Single or Middle Unit |
| Trailing Unit #2: | Short Hood Trail |

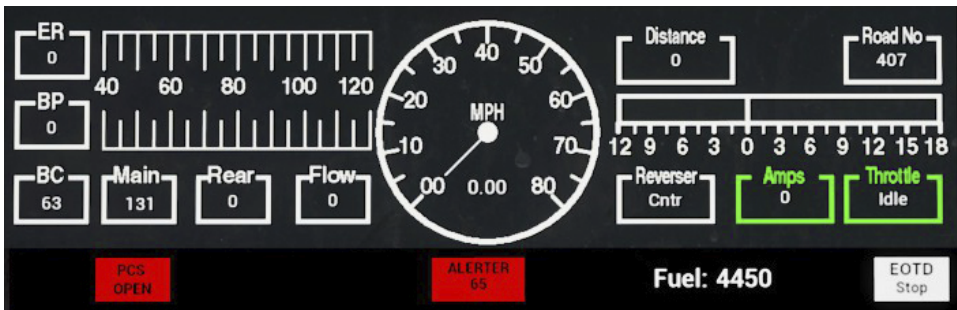
Operating the Alerter on the GE AC4400CW

In the GE AC4400CW there is no in-cab interactive way to enable or disable the Alerter, it is disabled by default. To enable or disable it, press **CTRL + NUMPAD ENTER** (while sat in the engineer's seat).

Once enabled, an additional indicator shows up on the standard IFD screen:



This indicator shows "ALERter 65". The 65 is the countdown timer so that you can always see it. If you are travelling over 5mph then this will begin to count down and once it gets to 5, the Alerter will sound and must be responded to by pressing the **Acknowledge** button on the desk, the **Q** key on your keyboard or the **B** button on your Xbox controller before the counter finally reaches zero.

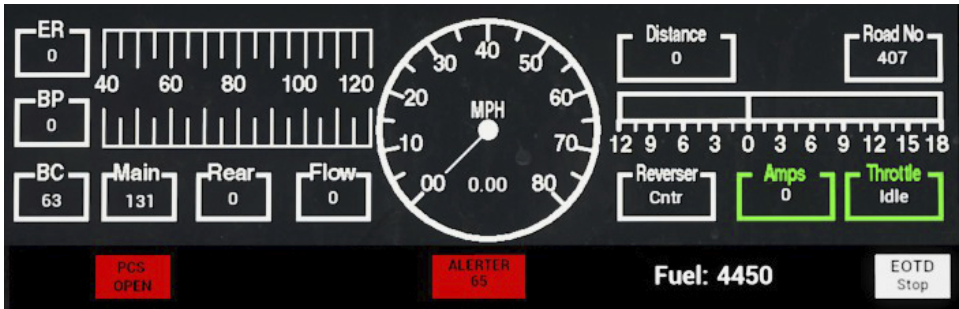


Once the emergency brake has applied and the "PCS OPEN" indicator is showing you will need to let the train stop and then follow the PCS Reset procedure for the AC4400CW to continue. This is detailed in a following section of this document.

Resetting PCS Application on the GE AC4400CW

When the Pneumatic Control Switch (or PCS) is open, the train brakes cannot be released and the throttle controls are deactivated. To operate your train again you must reset the PCS.

You can tell if it is activated by looking for the PCS OPEN indicator being present on the engineer's IFD:



Once the train has come to a complete stop, follow these steps:

If there is an alarm such as the Alerter sounding, acknowledge it (Q Key, B button on controller).

1. Set the Throttle to Idle
2. Set the Reverser to Neutral
3. Set the Independent Brake to Full Service
4. Set the Automatic Brake to Emergency
5. Wait for 60 seconds
6. Release the Automatic Brake and wait for the Equalising Reservoir / Brake Pipe to return to 90psi

Important Note: The Compressor on the AC4400CW is computer controlled and will activate automatically to maintain the pressure in the Main Reservoir, unlike on the older EMD SD40-2 and EMD GP38-2 locomotives.

Once the Equalising Reservoir and Brake Pipe needles have returned to 90psi, and the main reservoir has recharged to 140psi, put the throttle back to Idle.

You should now be able to release the **Independent Brake**, set the **Reverser** and apply **Throttle**.

Included Rolling Stock

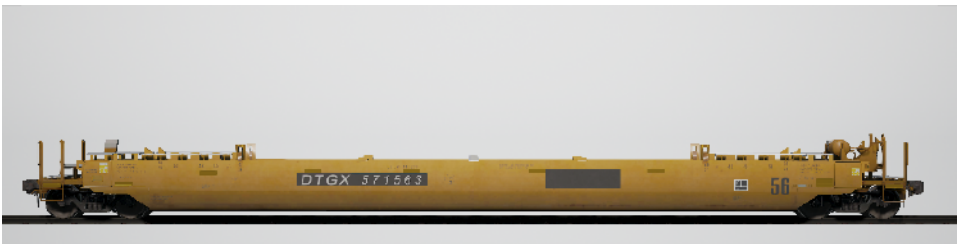
Sand Patch Grade is a busy steel artery that helps transport millions of tons of freight per year – and Train Sim World: CSX Heavy Haul features six types of contemporary freight equipment regularly operated on the route to tote a wide variety of tonnage and commodities.

BethGon II® Coal Gondola



Over its history, nothing has been more synonymous with Sand Patch Grade than hauling coal tonnage. In 1986, Johnstown America (now FreightCar America) introduced the aluminum-bodied BethGon tub gondola which quickly became a standard for coal-hauling across much of North America. In 2001, the enhanced BethGon II was introduced and by 2006, more than 100,000 aluminum-bodied cars had been constructed. CSX operates an expansive fleet of tub gons which feature maximum operating weights up to 286,000 pounds.

Husky Stack® 53-foot Container Car



Perhaps nothing is more representative of today's golden age of American freight railroading – nor more impressive – than a mile-long, towering intermodal stack train. First introduced in the late 1970s, stack cars have grown progressively longer and heavier and have been built in a variety of configurations. The 53-foot-well Husky Stack built by the Greenbrier Companies is a high-capacity, single-unit well car that carries containers ranging from 20- to 53-feet long in its well and can hold containers from 40- to 53-feet long in the top position.

89-foot Bi-Level Auto Rack



Beginning in the 1960s, auto racks helped the railroads recapture a lion's share of the transportation of new automobiles and the massive cars soon became a staple of American freight railroading. Originally open-sided, the auto racks have evolved into fully enclosed cars (to protect their contents) that stretch 89-feet in length and have been constructed in bi-level, tri-level, and convertible variants by a number of car builders. A CSX Bi-Level auto rack as constructed by TrinityRail will soon be in service on the Train Sim World Sand Patch Grade route.

5201-Cubic-Foot Covered Hopper



Covered hoppers made their first appearance on U. S. railroads in the early 1930s and have evolved into a primary workhorse of contemporary railroading. Today, in various sizes and configurations, covered hoppers carry everything from sand and cement to potash, grain, corn, and many other bulk commodities. As constructed by TrinityRail, the 5201-cubic-foot covered hopper is versatile car especially suited to carting agricultural products and dry chemicals.

30,500-Gallon Tank Car



Much like covered hoppers for dry commodities, tank cars represent a fundamental type of railroad equipment today for moving a diverse range of liquid loadings. In various sizes and in pressurized, non-pressurized, and insulated variants, tank cars carry contents ranging from crude oil to chemicals to food products. As constructed by the Greenbrier Companies and other manufacturers, the 30,500-gallon tank car is representative of a general-purpose tank car and often carries ethanol and similar liquid commodities.

50-foot Plate C Boxcar



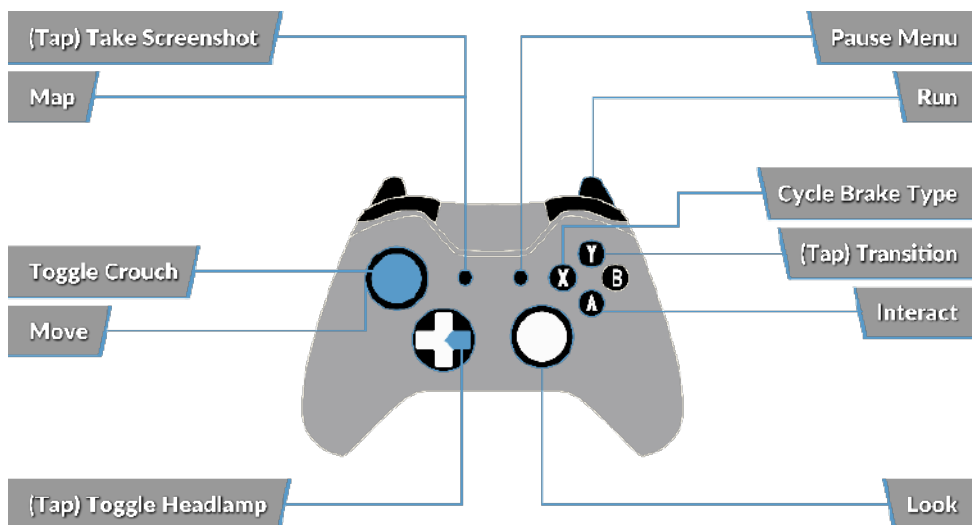
During the first century of American railroading, the boxcar was railroading's maid-of-all-work, carrying anything from LCL (less-than-carload) traffic to lumber and manufactured products and grain. Specialized rail equipment began replacing the ubiquitous boxcar as early as the 1960s, but through the decades, the boxcar has remained an important part of the railroad scene. Through railroading's long history, boxcars have ranged from the tiny wooden cars of the 19th century all the way to 86-foot-long auto-parts-carrying giants. Among the most common type of boxcar in service since the 1970s has been the "Plate C" 50-foot boxcar, which has been constructed by numerous manufacturers, and a versatile 50-footer in CSX livery will be included with the Sand Patch Grade route.

Controls / Input Devices

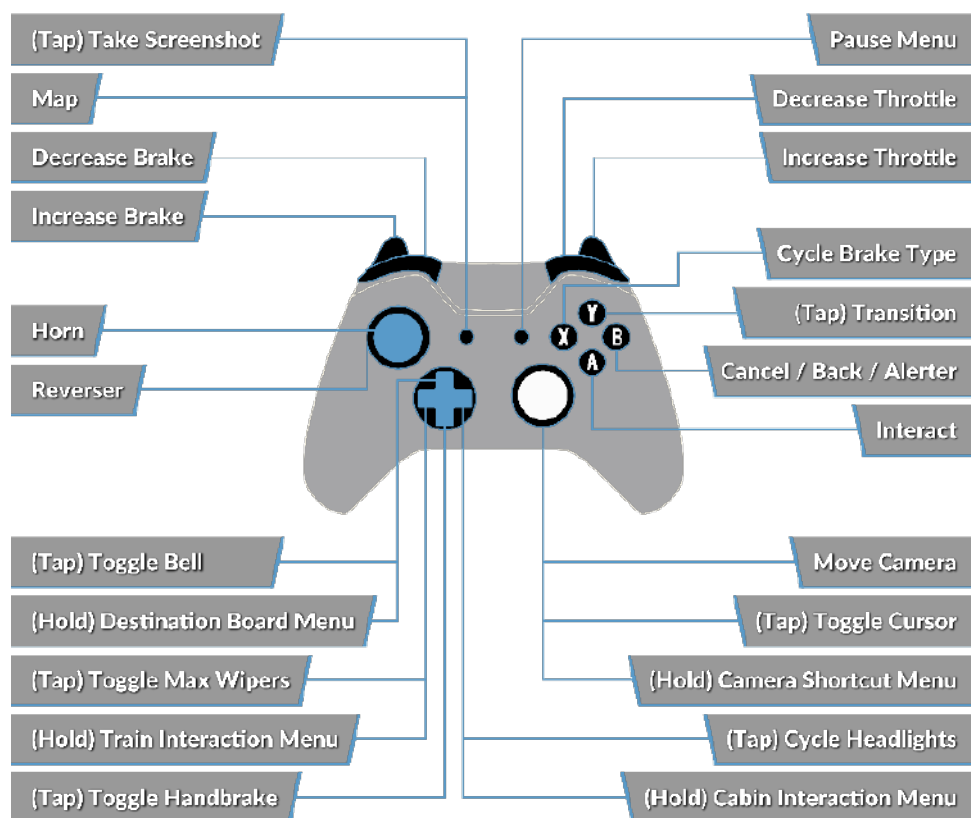
Input devices like the controller and keyboard take on different functions depending on what you are doing.

| Mode | Notes |
|---------------------------|--|
| First Person | When walking around the world in first person, this is the mode that is active. |
| Diesel Locomotive Driving | While you are sat at the controls of a diesel locomotive, this is the mode that is active. |
| External Camera | If you are driving a locomotive and opt to move to an external view camera, the system will behave in this mode. |

Controller - First Person Mode



Controller - Diesel Locomotive Mode



Keyboard - First Person Mode

| | |
|------------------|---|
| W/A/S/D | Walk forwards, Backwards, strafe left and right |
| C | Crouch |
| E | Interact with ladder, stairs etc. |
| L | Toggle headlamp/torch |
| Shift | Run |
| Mouse move | Turn, look up/down |
| Mouse left click | Interact |

Keyboard - Diesel Locomotive Mode

| | |
|---------|-----------------------------------|
| W/S | Reverser forwards, backwards |
| A/D | Throttle increase, decrease |
| Q | Alerter Reset |
| ; / ' | Autobrake Release / Apply |
| [/] | Independant Brake Release / Apply |
| < / > | Dynamic Brake Release / Apply |
| H | Headlight sequence forwards |
| Shift-H | Headlight sequence backwards |
| X | Toggle Lead Axle Sander |
| V | Increase wiper speed |
| Shift-V | Decrease Wiper Speed |
| Space | Horn |
| B | Toggle Bell |
| K | Toggle Step/Platform lights |
| I | Toggle instrument lights |
| E | Stand up from seat |
| J | Ditch Lights |
| ESC / P | Pause |

Camera Keys while Driving

| | |
|---|------------------------------|
| 1 | Cab Camera |
| 2 | External Front Follow Camera |
| 3 | External Rear Follow Camera |
| 8 | Free Roaming Camera |

Keyboard - External Follow and Free Roam Camera Mode

| | |
|-------------|-------------------------|
| Cursor Keys | Move camera |
| Shift | Accelerate camera speed |
| Ctrl-F12 | Take screenshot |

Controlling the Camera & Camera Modes

Train Sim World: CSX Heavy Haul includes a number of cameras for you to control, here's an outline of those cameras and some examples of use:



First Person Camera or Cab Camera

Use this camera to operate your locomotive, flip switches and handle all your cab controls.



Boom Camera

Just like the camera from Train Simulator 2017, your camera extends outward on an invisible pole, you can rotate it around your focussed vehicle. Use [CTRL] + Left & Right Cursor keys to switch between vehicles or press the [2] Key again to switch between the front and rear of your consist.



Floating Camera

A new camera that allows you to freely look in all directions, useful for coupling and changing switches. Press it once to view the front of your consist and again to view the rear. Freely move your view using the cursor keys.



Free Camera

Freely move around without limits using this camera. Use this camera to navigate your way around a busy yard, change switches or position it to get the perfect screenshot.

Introducing Train Sim World: Great Western Express



Train Sim World®: Great Western Express is an all new First-Person Simulator that brings to life the experience of operating high speed and commuter passenger trains on one of Britain's busiest railways.

Powered by Dovetail Games' new SimuGraph® vehicle dynamics engine and Unreal Engine 4® technology, Train Sim World uses real world data to accurately replicate the performance, sounds and feel of real trains. Master a range of diverse locomotives in a variety of activities from negotiating the bustling commuter network out of London Paddington to commanding one of Britain's most powerful freight locomotives. Catering for players of all ability levels with accessible tutorials for beginners and advanced procedures for experts.

An Introduction to the Great Western Main Line



Departing London's iconic Paddington main line railway station to the cities of Bristol and Plymouth, the route has captured the imagination of countless train fans and remains one of the most important routes in Britain.

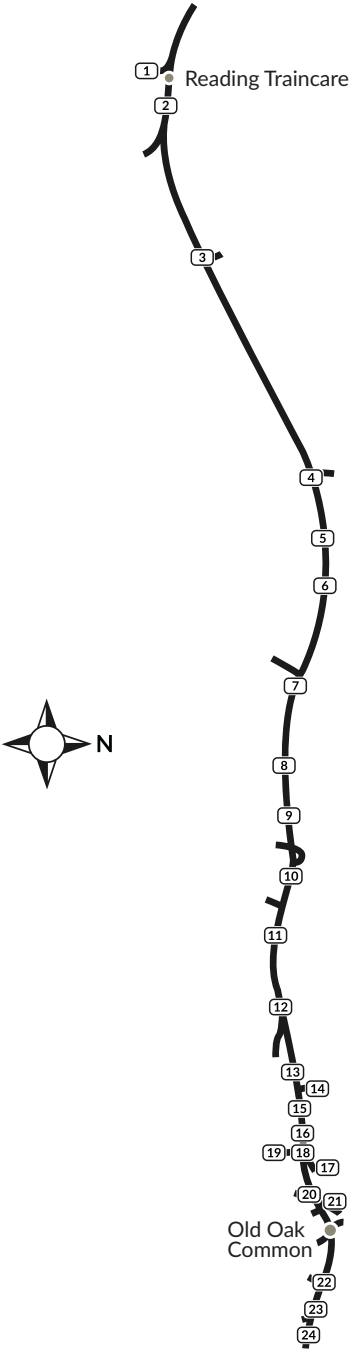
Engineered by Isambard Kingdom Brunel between 1838 and 1840, using Brunel's broad gauge (7-foot), the alignment of the route was so level and straight that it was nicknamed "Brunel's Billiard Table". Broad gauge survived on the route until 1892 though an additional rail was added in stages from 1854 to support standard gauge trains (4-foot 8½ inches).

Following the outbreak of World War I in 1914, the route was taken into government ownership, as did many of Britain's railways, and were later reorganised into the "Big Four" companies of which the Great Western Railway was one. The railway was once again taken into government ownership during World War II before being nationalised to form British Railways in 1948.

In 1970, the route saw a considerable upgrade in speed limit to accommodate the introduction of the InterCity 125 (HST or High Speed Train) which has remained a staple on the route for more than four decades.

Today, the Great Western Main Line remains an important corridor serving much of the south-western region of Britain by the current train operating company, Great Western Railway (GWR formerly First Great Western), who operate several train classes including the distinctive BR Class 43 or HST diesel-electric multiple units and BR Class 166 diesel multiple units.

Great Western Main Line Route Map & Key Locations

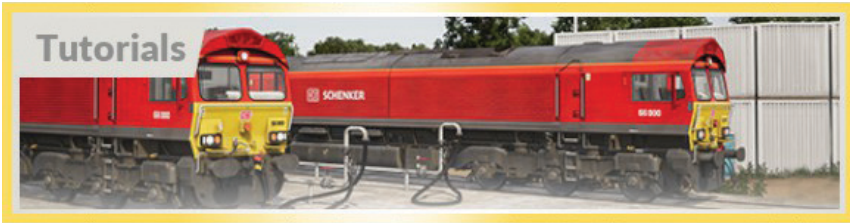


| | |
|----|--------------------|
| 1 | Reading West |
| 2 | Reading |
| 3 | Twyford |
| 4 | M Maidenhead |
| 5 | Taplow |
| 6 | Burnham |
| 7 | Slough |
| 8 | Langley |
| 9 | Iver |
| 10 | West Drayton |
| 11 | Hayes & Harlington |
| 12 | Southall |
| 13 | Hanwell |
| 14 | Drayton Green |
| 15 | West Ealing |
| 16 | Ealing Broadway |
| 17 | North Ealing |
| 18 | West Acton |
| 19 | Ealing Common |
| 20 | Acton Main Line |
| 21 | North Acton |
| 22 | Westbourne Park |
| 23 | Royal Oak |
| 24 | London Paddington |

The Game Modes

Tutorials

Tutorials give you the knowledge you need to get the most from your locomotives and trains via interactive lessons that teach you key concepts. If you're new to Train Sim World, we recommend you start here to learn the fundamentals.



Scenarios

Provides a selection of operations over the Great Western Main Line route, Scenarios are objective based activities which provides unique experiences. Put your skills to the test mastering the busy Paddington Station or challenge your mettle by powering heavy freight through one of the busiest railways in Britain.



Services

Provides a host of activities throughout an entire 24-hour time period, Service Mode is a new way to play. There's always something to do with a large variety of services to take control of or ride along with. Sit back and enjoy the action and capture amazing screenshots, hop on or off and ride along with the various services as they go about their duties or take control and carry out the duties yourself. Featuring over 300 individual services, you'll always find something going on.



An Introduction to the British Rail Class 43



The British Rail Class 43 is an icon of high speed travel in the UK and currently holds the World Speed Record for a Diesel-Powered train. However, they did not start life as Class 43s but were in fact designated as multiple units classified, under TOPS, as Class 253 and Class 254. Designed in the latter part of the 1970s, the “HST” (short for High Speed Train) as they would be lovingly referred to by fans of the class, they became something quite unexpected.

4th October 1976 became synonymous with speed lovers as the dawn of high speed rail travel in the UK, HSTs were for the first time able to reach their 125mph potential and went on to kick-start an era of success for British Rail. Little was it known at the time that the HST would go on for forty years, succeeding where no other train was able. No other train in the history of Britain’s railways has ever achieved so much.

HSTs were introduced to revenue earning service in August 1976. However, restrictive timetables meant that HST services were unable to exceed 100mph – no better than most loco-hauled trains at the time. HST services displaced many iconic, and much loved, first generation diesels such as the ‘Westerns’ and ‘Deltics’ and, as such, were not openly accepted by many rail enthusiasts. They were widely taken to by the public however, as the HST afforded not only a considerable upgrade in comfort over the ageing coaching stock offered with loco-hauled services but, from the public’s perspective, by far the largest benefit was shorter journey times.

Despite many early teething problems, the HST continued to prove itself year-after-year as a high-speed platform and ultimately became the envy of the World. As we all know, the HST became a staple of high speed travel in the UK and, forty years on, it was clear that no-one could have foreseen that the HST would build a legacy of being the most successful train on Britain’s rails, nor that it would still be doing the job that it was designed for so well.

Quick Start Guide: British Rail Class 43

1. Enter the leading cab
2. Insert the Master Key on the Reverser and then move it to the Engine Off position
3. Move the Train Brake lever to the Full Service position
4. If the Parking Brake is applied, press the button to release it
5. Press the Engine Start button to start both the engines in the forward and rear power cars. Both engines are interlinked and will start when the button is used in either cab.
6. The train starts with all safety systems disabled, to activate them, locate the controls at the secondman's position on the control desk. The train is fitted with Automatic Warning System (AWS), Train Protection and Warning System (TPWS), Driver Vigilance Device (DSD) and Driver Reminder Appliance (DRA) systems. The relevant controls will therefore become enabled upon activating the system.
7. On enabling the AWS system, this will also enable the TPWS system as both systems are integrated. A self-test will commence and you will need to acknowledge the alert to proceed. Press the Q key on your keyboard to do so.
8. On enabling the DSD system, you will hear an alert periodically that you will need to acknowledge using the Q key. If you do not react quickly enough, the train will commence an emergency brake application.
9. If the DRA is enabled, press the button to deactivate the system. The DRA system, when activated, will disable the throttle control, you will not be able to apply power until the system has been deactivated.
10. Enable the Electric Train Supply by pressing, and holding, the appropriate button. Once the system is active, the ETS Supply indicator will illuminate.
11. If you wish, you can adjust the Gauge Illumination by using the Gauge Dimmer control.
12. Set your headlights to the correct running mode, Day during daylight hours from 8am until 8pm; Night during twilight and evening hours from 8pm to 8am or where it is necessary to improve visibility for users of the railway and trackside signage.
13. Ensure all cab doors are closed.
14. Ensure all passenger saloon doors are closed. Door controls for each side of the train can be controlled independently. You can interact with the door system by using the TAB key on your keyboard and selecting the appropriate option. If the doors are open, a relevant option for you to close and lock the doors will be available. **Important Safety Notice:** Care should be taken to ensure the correct doors are unlocked, only unlock doors that are adjacent to a platform. For reference, the left side relates to the left side when facing the direction of travel. The BR Class 43 does not have a traction interlock with the Central Door Locking (CDL) mechanism, this means you can apply power regardless of the passenger door situation. You should check the doors

are closed and locked (check for the orange CDL lights on the coach body sides) before commencing your departure from a platform.

15. To move your train, simply move the reverser to the forward position, deactivate the DRA system (if enabled), release the brake noting the brake pressure acting on the bogies (centre brake gauge). On reaching 1 bar, move the power controller to notch 1. As the train begins to move, you can then select any other power notch, ensuring you do not exceed the Maximum Permitted Speed.

An Introduction to the British Rail Class 166



The Networker family was to be a wide range of standardised EMU and DMU fleets that would revolutionise South East London, Kent, and the Great Western and Chiltern territories, comprising of both local commuter and more express-focused stock. In 1989, after having already worked as a prototype Class 210, the Networker development train, now classified as the Class 457, began the testing of what would become the technical arrangements of the average third rail Networker. The following year saw a conversion to overhead equipment for testing, and another reclassification to the Class 316.

Despite the extensive electrical testing, some of the first Networkers to be built at ABB York were diesel-hydraulic multiple units for the Great Western and Chiltern Main Lines, the Class 165 and Class 166, known as the Networker Turbo and Networker Turbo Express respectively. Both of these lines were not electrified, such a development was not deemed possible at the time, and so diesel traction was still a necessity.

The Class 166 Networker Turbo Express was designed and built as a faster variant of the earlier Class 165. The 90 mph-capable Class 166 would be able to cover longer distance stopping services while the slower Class 165 worked the local services out of London Paddington. As the Class 166 was designed with express workings in mind, they were also fitted with air-conditioning, an extra toilet, first class with tables, luggage storage and a fully carpeted interior with different panelling.

A total of 21 Class 166 DMUs were delivered to Network Southeast between 1992 and 1993, for use as express commuter stock out of London Paddington and out along the Thames Valley. The fleet has subsequently operated as such for Thames Trains, First Great Western Link, First Great Western and now, Great

Western Railway. The fleet's Thames Valley-exclusivity was however stopped by GWR, as a handful of 166s have begun working the Severn Beach Line, having been replaced by Class 387 Electrostars, which themselves are a derivative of the Networker family.

In the past 7 years, the Class 166 fleet has undergone multiple refreshes to bring them up to standard. An £8 million project was announced in 2010 and saw the fleet receive repainted interiors, upgraded toilets, a new GPS-based Passenger Information System and retrimmed carpets & seats. Four years later, and the Class 166s also received new headlights, toilets and door buttons & alarms. The most recent change for the fleet is the gradual re-livery into Great Western Green, and they will soon receive 2+2 seating as more of the fleet moves out of London.

Quick Start Guide: British Rail Class 166

1. Enter the leading cab
2. Unlock the Master Key
3. Move the Combined Throttle and Brake controller to the Full Service position
4. The parking brake on the Class 166 is automatic so there is no control to operate.
5. Press the Engine Start button to start the engines on all of the vehicles.
6. The train starts with all safety systems disabled, to activate them, locate the controls at the upper left console from the driving position and on the Micro-Circuit Breaker panel behind the driving position. The train is fitted with Automatic Warning System (AWS), Train Protection and Warning System (TPWS), Driver Vigilance Device (DSD) and Driver Reminder Appliance (DRA) systems. The relevant controls will therefore become enabled upon activating the system.
7. On enabling the AWS system, this will also enable the TPWS system as both systems are interlinked. A self-test will commence and you will need to acknowledge the alert to proceed. Press the Q key on your keyboard to do so.
8. On enabling the DSD system, you will hear an alert periodically that you will need to acknowledge using the Q key. If you do not react quickly enough, the train will commence an emergency brake application.
9. If the DRA is enabled, press the button to deactivate the system. The DRA system, when activated, will disable the throttle control, you will not be able to apply power until the system has been deactivated.
10. Enable the Passenger Saloon Lighting (Train Lighting) by pressing the appropriate button.
11. If you wish, you can adjust the Gauge Illumination by using the Back Illumination controls under the Speedometer.
12. Set your headlights to the correct running mode, Day Mode during daylight hours from 8am until 8pm; Night Mode during twilight and evening hours from 8pm to 8am or where it is necessary to improve visibility for users of the railway and trackside signage.
13. Ensure all cab doors are closed.
14. Ensure all passenger saloon doors are closed. Door controls for each side of the train can be controlled independently. You can interact with the door system by using the TAB key on your keyboard and selecting the appropriate option. If the doors are open, a relevant option for you to close and lock the doors will be available. You can also interact with the door control systems via the 3D cab. Click the relevant control to open or close the doors on the side required. Important Safety Notice: Care should be taken to ensure the correct doors are unlocked, only unlock doors that are adjacent to a platform. For reference, the left side relates to the left side when facing the direction of travel. The BR Class 166 incorporates a traction interlock with the Central Door Locking (CDL) mechanism, this means you cannot apply power if the doors are

open or unlocked. A relevant indicator is displayed on the control desk to advise of the door interlock status.

15. To move your train, simply move the reverser to the forward position, deactivate the DRA system (if enabled), move the Combined Throttle and Brake Controller to the neutral position. On reaching 1 bar, move the power controller to notch 1. As the train begins to move, you can then select any other power notch, ensuring you do not exceed the Maximum Permitted Speed.

An Introduction to the British Rail Class 66



In 1996, the privatisation of British Rail reached freight operations, and the previously grouped divisions such as Mainline Freight, Load-Haul and Trans-Rail were due to be sold to new private owners. Wiscinsin Central Transportation Systems opted to buy a majority of the divisions in one go, quickly taking charge of no less than 93% of UK rail freight operations. After consulting with the public, the new freight operating company (FOC) was named English Welsh & Scottish.

Naturally, by taking over such a significant portion of operations, EWS inherited a lot of locomotives, many of which were, at least from their point of view, ageing and proving expensive with more frequent maintenance. EWS sought to introduce a new freight locomotive for the UK, one that would be more powerful, more reliable, and more cost effective; they turned to an already-in-service design, the Class 59, as the basis for their new fleet.

EMD designed the Class 59 in the 1980s as a UK-compatible derivative of the SD40-2, and despite a handful only being built, the private companies that owned them were impressed with their powerful performance. EWS approached EMD about ordering a new fleet, and EMD offered an upgraded iteration of the Class 59; same bodyshell, but different engines and traction motors, plus the addition of self-steering bogies to reduce wear.

EWS were impressed, and ordered 250 locomotives which were to be built in London, Ontario, Canada. Initially, the new fleet were to be classified as the BR Class 61 under TOPS, but this was later changed to Class 66. The first Class 66 arrived on UK soil in June 1998, and deliveries continued consistently until December 2001.

The Class 66 fleet proved to be a success, EWS owned such a majority of the freight market that the new locomotives could be seen practically anywhere, on everything from spoils trains to container freight, aggregate duties and engineering works. As they were the prime culprit, in many enthusiasts' eyes, for the withdrawal of countless British-built locomotives, the Class 66 became known as "The Red Death", however they were warmed to enough at least to warrant a nickname, the "Shed", owing to their shed-like roof profile. Nevertheless, the Class 66's reliability and versatility has been key to a competitive rail freight market.

Freightliner, GB Railfreight and Direct Rail Services would also go on to ordering the Class 66 in bulk from the late 1990s to 2015, by which point stringent emission regulations put a cap on the class, and the final locomotive, 66 779, was delivered in February 2016 and named 'Evening Star', sporting a nostalgic BR Green livery. Despite the last being built however, a total of 455 Class 66 locomotives have been delivered to the UK over the past 19 years; a resounding achievement for rail freight operations in the UK.

The EWS-bound Class 66 fleet was first seen of course in the Red and Yellow EWS livery, with the stylistic "Beasties" logo depicting the heads of a lion (England), dragon (Wales) and stag (Scotland). In 2007, Deutsche Bahn purchased EWS and assumed control of all operations. DB stated that they would not rebrand EWS, but that changed in 2009 when a Class 59 was unveiled with DB Schenker branding and a new bright red livery. Today, many Class 66 locomotives adorn the striking new coat of paint, and despite DB Schenker itself being rebranded as DB Cargo Rail UK in 2016, only a handful of locomotives have received a logo change so far.

Quick Start Guide: British Rail Class 66

1. Enter the leading cab
2. The Master Key of the Class 66 is in fact the reverser lever itself, it can only be inserted or removed when the handle is in the neutral position. To insert the Master Key click on the reverser control housing (the part that the handle is inserted to).
3. The brake control on the Class 66 is a Proportional control. This means you apply and release the brake by adding or removing air in the system. Moving Automatic Brake handle forward applies the brake, moving it backward, releases the brake. Press and hold the Automatic Brake control forward until the Brake Pipe Control gauge reads 3.4 bar.
4. If the Parking Brake is applied, denoted by the Dowty indicator on the control desk, press the button to release it
5. Press the Engine Start button to start the engine.
6. The train starts with all safety systems disabled, to activate them, locate the controls in the right-most cabinet behind the driving position. The train is fitted with Automatic Warning System (AWS), Train Protection and Warning System (TPWS) and Driver Vigilance Device (DSD). The relevant controls will therefore become enabled upon activating the system.
7. On enabling the AWS system, this will also enable the TPWS system as both systems are interlinked. A self-test will commence and you will need to acknowledge the alert to proceed. Press the Q key on your keyboard to do so.
8. On enabling the DSD system, you will hear an alert periodically that you will need to acknowledge using the Q key. If you do not react quickly enough, the train will commence an emergency brake application.
9. Set your headlights to the correct running mode, Day Mode during daylight hours from 8am until 8pm; Night Mode during twilight and evening hours from 8pm to 8am or where it is necessary to improve visibility for users of the railway and trackside signage.
10. Ensure all cab doors are closed, including the rear cab.
11. To move your train, simply move the reverser to the forward position, release the brake by moving the Automatic Brake control backward until the Brake Pipe Control gauge reads 5 bar. Move the power controller to notch 1. As the train begins to move, you can then select any other power notch, ensuring you do not exceed the Maximum Permitted Speed.

Included Rolling Stock



British Rail HKA Bogie Aggregate Hopper Wagon

Formerly built for National Power, DB Cargo Rail UK's HKA hoppers were once used to haul coal into Drax Power Station, but after significant conversion are used today for aggregate works all around the country, including at Southall on the Thames Valley. Since 2014, HKA aggregate hoppers have been resplendent in DB Schenker Red, so when combined with a repainted Class 66 some seriously bright traffic is scheduled to come through.



British Rail FKA (Sffggmrss) Intermodal Twin Low Platform Flat Wagon

Additionally, with connections to the rest of the network via the North London Line, the Great Western Main Line sees container freight trains from various ports, delivering goods all over the country. DB Cargo UK employ container flats such as the FKA for such a job, allowing for swift loading and shipping.

Passenger Door Controls

In Train Sim World: Great Western Express, you can control the passenger entry and exit doors on each side independently i.e. either left side or right side. A simple method of control has been implemented for both the BR Class 43 and BR Class 166. Simply press the TAB key to call up the menu and select which side of the train you wish to lock/unlock the doors.



On the BR Class 166, you can also interact with the passenger doors by using the appropriate controls on the driver's control desk.



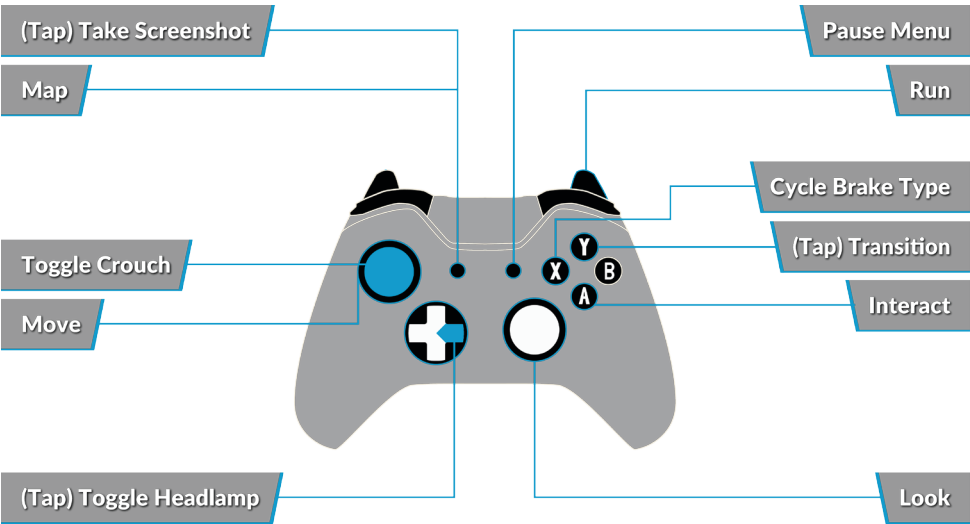
Once you have unlocked the doors, the passengers will be able to alight and board the train via any of the unlocked doors and care should be taken to avoid opening the doors on the wrong side of the train. A random length timer will begin to count down as shown in the indicator in the top-left of the screen. Once the timer has expired, you can then proceed to close the doors and proceed to the next station.

Keyboard & Other Controls

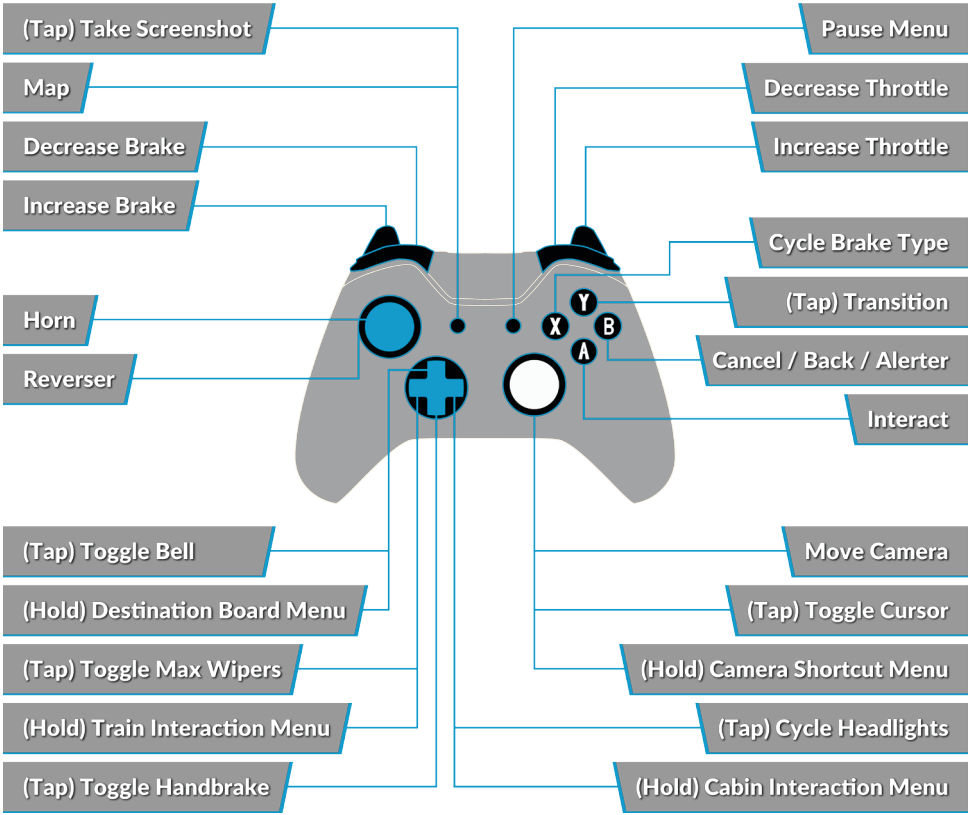
Input devices like the controller and keyboard take on different functions depending on what you are doing.

| Mode | Notes |
|---------------------------|--|
| First Person | When walking around the world in first person, this is the mode that is active. |
| Diesel Locomotive Driving | While you are sat at the controls of a diesel locomotive, this is the mode that is active. |
| External Camera | If you are driving a locomotive and opt to move to an external view camera, the system will behave in this mode. |

Controller - First Person Mode



Controller - Diesel Locomotive Mode



Keyboard - First Person Mode

| | |
|------------------|---|
| W/A/S/D | Walk forwards, Backwards, strafe left and right |
| C | Crouch |
| E | Interact with ladder, stairs etc. |
| L | Toggle headlamp/torch |
| Shift | Run |
| Mouse move | Turn, look up/down |
| Mouse left click | Interact |

Keyboard - British Rail Class 43 Locomotive

| | |
|--------------|---|
| Z | Engine Startup Button |
| Shift + Z | Engine Stop Button |
| Ctrl + W | Toggle Master Key |
| W/S | Reverser forwards, backwards and off |
| A/D | Throttle increase, decrease |
| Q | Safety Systems reset |
| Ctrl + Enter | Toggle Safety Systems Normal/Isolated |
| ; / ' | Train Brake Release / Apply |
| \ | Toggle Parking Brake |
| Backspace | Toggle Emergency Brake |
| H | Headlight sequence forwards |
| Shift-H | Headlight sequence backwards |
| Ctrl + H | Toggle Headlight Flash |
| V | Increase Wiper speed |
| Shift-V | Decrease Wiper Speed |
| Space | Horn High Tone |
| N | Horn Low Tone |
| I | Toggle Instrument Lights |
| L | Toggle Cab Light |
| TAB | Request Signal Pass at Danger, Unlock/Lock Left/Right Passenger Doors |
| E | Stand up from seat |
| ESC / P | Pause |

Keyboard - British Rail Class 166 DMU

| | |
|--------------|---|
| Z | Engine Startup Button |
| Shift + Z | Engine Stop Button |
| Ctrl + W | Toggle Master Key |
| W/S | Reverser forwards, backwards and off |
| A/D | Combined Throttle/Brake Increase/Decrease |
| Q | Safety Systems reset |
| Ctrl + Enter | Toggle Safety Systems Normal/Isolated |
| ; / ' | Toggle Brake Hold |
| Backspace | Toggle Emergency Brake |
| H | Headlight sequence forwards |
| Shift-H | Headlight sequence backwards |
| Ctrl + H | Toggle Hazard Lights |
| V | Increase Wiper speed |
| Shift-V | Decrease Wiper Speed |
| Space | Horn High Tone |
| N | Horn Low Tone |
| I | Toggle Instrument Lights |
| L | Toggle Cab Light |
| TAB | Request Signal Pass at Danger, Unlock/Lock Left/Right Passenger Doors |
| E | Stand up from seat |
| ESC / P | Pause |

Keyboard - British Rail Class 66 Locomotive

| | |
|---------------|--|
| Z | Engine Startup Button |
| Shift + Z | Engine Stop Button |
| Ctrl + W | Toggle Master Key |
| W/S | Reverser forwards, backwards and neutral |
| A/D | Throttle increase, decrease |
| Q | Safety Systems reset |
| Ctrl + Enter | Toggle Safety Systems Normal/Isolated |
| ; / ' | Train Brake Release / Hold / Apply |
| [/] | Direct Brake Release / Hold / Apply |
| \ | Toggle Parking Brake |
| Backspace | Toggle Emergency Brake |
| H | Headlight sequence forwards |
| Shift-H | Headlight sequence backwards |
| V | Increase wiper speed |
| Shift-V | Decrease Wiper Speed |
| Space | Horn High Tone |
| N | Horn Low tone |
| X / Shift + X | Toggle Sand Stick |
| I | Toggle instrument lights |
| L | Toggle Cab Light |
| TAB | Request Signal Pass at Danger |
| E | Stand up from seat |
| ESC / P | Pause |

Keyboard - External Follow and Free Roam Camera Mode

| | |
|-------------|-------------------------|
| Cursor Keys | Move camera |
| Shift | Accelerate camera speed |
| Ctrl-F12 | Take screenshot |

Controlling the Camera & Camera Modes

Train Sim World: Great Western Express includes a number of cameras for you to control, here's an outline of those cameras and some examples of use:



First Person Camera or Cab Camera

Use this camera to operate your locomotive, flip switches and handle all your cab controls.



Boom Camera

Just like the camera from Train Simulator 2017, your camera extends outward on an invisible pole, you can rotate it around your focussed vehicle. Use [CTRL] + Left & Right Cursor keys to switch between vehicles or press the [2] Key again to switch between the front and rear of your consist.



Floating Camera

A new camera that allows you to freely look in all directions, useful for coupling and changing switches. Press it once to view the front of your consist and again to view the rear. Freely move your view using the cursor keys.



Free Camera

Freely move around without limits using this camera. Use this camera to navigate your way around a busy yard, change switches or position it to get the perfect screenshot.

Customising the HUD

Train Sim World: Great Western Express includes many options for you to customise the Head Up Display (HUD):

| | |
|---------------|---|
| CTRL+1 | Toggles the in-world objective marker |
| CTRL+2 | Toggles the in-world next speed limit marker |
| CTRL+3 | Toggles the in-world next signal marker |
| CTRL+4 | Cycles the next speed limit / signal information panel in top right |
| CTRL+5 | Toggles the speedometer panel (or clock/compass while walking) |
| CTRL+6 | Toggles the Score Display |
| CTRL+7 | Toggles the passenger stop marker on the track |
| CTRL+8 | Cycles the centre dot transparency (off, 50/50, white) |

Introducing Train Sim World: NEC New York



Train Sim World®: NEC New York is an all new first-person simulator that brings to life the experience of the North East Corridor featuring both passenger and freight trains on America's busiest passenger line.

Powered by Dovetail Games' new SimuGraph® vehicle dynamics engine and Unreal Engine 4® technology, Train Sim World uses real world data to accurately replicate the performance, sounds and feel of real trains. Master the Amtrak ACS-64 and CSX GP38-2 in and around New York as you ensure commuters get to their destinations. This add-on caters for players of all ability levels with accessible tutorials for beginners and advanced procedures for experts.

An Introduction to the Northeast Corridor



This route represents the busy and vital portion of Amtrak's electrified Northeast Corridor in and around the New York City area.

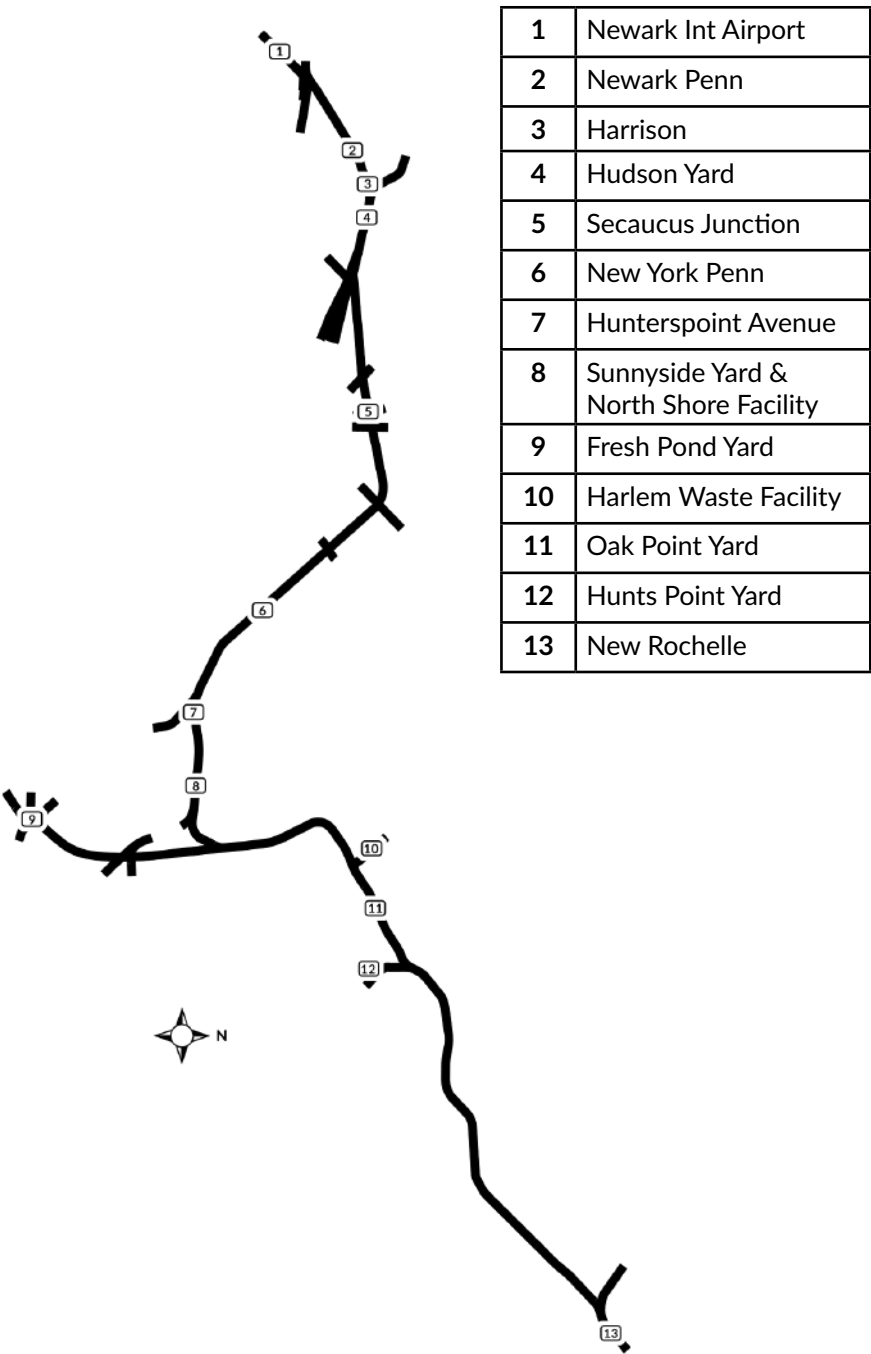
Amtrak's Northeast Corridor, extending 457 miles from Boston, Massachusetts via New York City to Washington, D. C., is the busiest passenger route in the U. S., and certainly one of the most famous. Today, Amtrak carries more than 12 million passengers annually on the NEC.

South of New York, the route's heritage is a part of the great Pennsylvania Railroad's electrified lines; North of New York City, the route was built and operated by the famed New York, New Haven & Hartford. Upon its formation in May 1971, Amtrak assumed the intercity passenger operations of the Northeast Corridor.

Notable landmarks on this route include historic New York Penn Station, Amtrak's busiest station nationwide; the Hudson River and East River tunnels that provide access to Penn Station; sprawling Sunnyside Yard, which is the servicing and staging point of Amtrak services to and from New York City; and the awe-inspiring Hell Gate Bridge crossing of the East River.

In addition to trackage owned and operated by Amtrak, this route includes adjoining CSX freight-only trackage including Oak Point Yard, Harlem River Yard, Hunts Point Produce Terminal in the Bronx section of New York City, and CSX's Fremont Secondary connecting the Hell Gate Line with the New York & Atlantic's Fresh Pond Yard in Queens, New York.

NEC New York Route Map & Key Locations



The Game Modes

Tutorials

Tutorials give you the knowledge you need to get the most from your locomotives and trains via interactive lessons that teach you key concepts. If you're new to Train Sim World, we recommend you start here to learn the fundamentals.



Scenarios

These provide a selection of operations over the NEC New York route, Scenarios are objective based activities which provide unique experiences. Put your skills to the test mastering the operations in the unique New York Penn station or handle freight in CSX's Oak Point Yard, all on the busiest part of the busiest rail line in the United States.



Services

These provide a host of activities throughout an entire 24-hour time period, Service Mode is a new way to play. There's always something to do with a large variety of services to take control of or ride along with. Sit back and enjoy the action and capture amazing screenshots, hop on or off and ride along with the various services as they go about their duties or take control and carry out the duties yourself. Featuring many individual services, you'll always find something going on.



An Introduction to the Amtrak ACS-64 Electric Locomotive



The Northeast Corridor has been home to a long lineage of famous electric locomotives, including the Pennsylvania Railroad's iconic GG1 and Amtrak's long-lived AEM-7. Today's standard-bearer on the NEC is the ACS-64 ("ACS" stands for "Amtrak Cities Sprinter"). Constructed by Siemens Mobility, a subsidiary of Siemens AG of Germany, the stylish electric locomotive's design is based on the successful EuroSprinter. Amtrak has purchased 70 ACS-64s, the first of which entered service in February 2014.

With a 6,400-kW (8,600-horsepower) capability, the four-axle, 54,250-pound ACS-64 features a monocoque body and double-cab. It regularly operates at speeds up to 125 miles per hour. The ACS-64 is equipped to operate on each of the NEC's three A.C. voltages (25 kV 60Hz; 12.5 kV 60 Hz; and 12 kV 25Hz) and features high-capacity regenerative braking.

Now, and likely for decades to come, the ACS-64 serves as the versatile workhorse of the Northeast Corridor, entrusted to power Amtrak's Northeast Regional, Keystone, and long distance services over the length of the busy and fast-paced NEC.

Amtrak "Amfleet I" Passenger Equipment

When Amtrak was created in 1971, it inherited vintage equipment from the private-carrier railroads and an immediate need was for new locomotive-hauled rolling stock. To quickly address that requirement, Amtrak, together with the Budd Company, developed the "Amfleet" concept, which was based upon the carbody

design of the Pennsylvania Railroad's high-speed "Metroliner" electric-multiple-unit equipment.

Between 1975 and 1977, Budd produced 492 "Amfleet I" cars, including coaches and café/lounge cars. Measuring 84 feet long, with a coach capacity of up to 84 passengers and vestibules at each end, these stainless-steel cars were well suited to the needs and rigor of the high-density Northeast Corridor. In the early 1980s, 150 "Amfleet II" cars were constructed for longer-distance services. Decades after their construction and with numerous program upgrades, the Amfleet I fleet remains the primary equipment for Amtrak's Northeast Regional services and the cars are authorized to operate at speeds up to 125 mph.

Included with this route are the Amfleet I standard coach, café car, and a car configured for Business Class services, which is offered on many Northeast Regional trains.

Quick Start Guide: Amtrak ACS-64

1. Enter the required cab.
2. Press and hold the 'Battery Control' button for approximately 5 seconds.
(Located on rear wall panel of the cab, at the top left)
3. Sit in the engineer's seat.
4. Put the reverser switch into the 'Neutral' position to activate the engineer's console.
(Located near the top centre of the engineer's console)
5. Press the 'Pantograph Up' button.
(Located on the left side of the engineer's console)
6. Make sure the MCB switch is in the 'Closed' position. This might requires the switch first being moved into the 'Open' position, before being returned to the 'Closed' position.
(Located to the left of the 'Pantograph Up' button)
7. The TOD (Train Operator Display) will indicate when the Air Brakes are fully charged.
(The TOD directly in front of the Engineer should show a main reservoir pressure of approximately 140 PSI)
8. Put the reverser switch into the 'Forward' or 'Reverse' position.
(Located near the top centre of the engineer's console)
9. Move the automatic brake and independent brake handles into their 'Release' positions.
(Located on the right side of the engineer's console)
10. Gradually move the master controller forward into the throttle range to start applying tractive effort to the train.
(Located on the left side of the engineer's console)
11. The last few pounds of air pressure holding the train stationary will release and the train will start to accelerate.

An Introduction to the CSX GP38-2 Locomotive



The Electro-Motive “Geep” first appeared on the North American railroad scene in 1949, in the form of the classic GP7. Over the following decades, more than 20 different variations of iconic “Geeps” were produced by Electro-Motive, and among the most successful and versatile of this landmark line of locomotives has been the GP38-2.

Produced between 1972 and 1986, the 16-cylinder, 2,000-horsepower, four-axle (B-B) GP38-2 garnered 2,222 sales to more than 60 original buyers. The GP38-2 was ending production at the same time today’s 21,000-mile rail giant CSX was being formed, but nonetheless CSX became a major operator of the type by inheriting the GP38-2 fleets of four predecessor roads.

The venerable and versatile GP38-2 carries on today as a key locomotive in CSX’s locomotive fleet and, in fact, is having its life extended via the railroad’s rebuilding programs.

50-foot Plate C Boxcar

During the first century of American railroading, the boxcar was railroading’s versatile workhorse, carrying anything from LCL (less-than-carload) traffic to lumber, manufactured products and grain. Specialized rail equipment began replacing the boxcar as early as the 1960s, but through the decades, the boxcar has remained an important part of the railroad scene. Through railroading’s history, boxcars have ranged from the wooden cars of the 19th century to 86-foot-long auto-parts-carrying giants. Among the most common type of boxcar in service

since the 1970s has been the Plate C 50-foot boxcar, which has been constructed by numerous manufacturers.

5201-Cubic-Foot Covered Hopper

Covered hoppers made their first appearance on U. S. railroads in the early 1930s and have evolved into a primary element of contemporary railroading. Today, in various sizes and configurations, covered hoppers carry everything from sand and cement to potash, grain, corn, and many other bulk commodities. The 5201-cubic-foot covered hopper is versatile car especially suited to carting agricultural products and dry chemicals.

30,500-Gallon Tank Car

Much like covered hoppers for dry commodities, tank cars represent a fundamental type of railroad equipment today for moving a diverse range of liquid loadings. In various sizes and in pressurized, non-pressurized, and insulated variants, tank cars carry contents ranging from crude oil to chemicals to food products. As constructed by various manufacturers, the 30,500-gallon tank car is representative of a general-purpose tank car and often carries ethanol and similar liquid commodities.

73-foot Centerbeam Flatcar

The centerbeam flatcar is a staple of contemporary U. S. railroading, used to efficiently haul lumber, wallboard, and similar products. In design, the cars are similar to bulkhead flats, but with a center partition providing extra stability for the loads. The centerbeam design was first introduced in the 1960s by Canadian National and from the 1980s through today has been widely used throughout North America. The most common length of centerbeam flats is 73 feet.

85-foot Open Deck Flatcar and Containers

The flatcar has been a tool of railroading since the origins of the industry, but like all rolling stock, it has dramatically evolved over the decades in length, weight, and purpose. In recent years, railroads have increasingly been called upon to haul paper waste and trash from collection facilities in major cities to disposal sites. Today, such haulage is often accomplished with the use of 85-foot-long open-deck flatcars equipped to carry four 20-foot-long closed containers.

Quick Start Guide: CSX GP38-2

1. Set the handbrake, you'll find the handbrake crank handle at the short hood end of the locomotive.
2. Enter the cab and open the fuse box.
3. Check that the main breaker and all fuses are switched to the on position and close the fuse box door.
4. Above the fuse box, set the isolation switch to the 'Start' position.
5. Turn on the engine room light, platform lights and cab light if required.
6. Ensure the reverser and throttle are at neutral positions
7. Proceed to the long hood end of the locomotive and open the Latch (*upper right of the engine room door*) and then the Engine Room Doors.
8. Move and hold the Prime/Start Switch to the left (*Prime*) for 5 seconds.
9. Release the Prime/Start Switch and then move it to the right (*Start*) momentarily to trigger the engine start.
10. Await the engine start to complete.
11. Close the Engine Room Doors.
(*Note they must be closed in the right order!*)
12. Return to the cab and set the isolation switch to the 'Run' position.
13. Turn off the engine lights if you turned it on.
14. Turn on the number lights as appropriate.
15. Sit in the engineer's seat.
16. At the top right of the main control stand (*your left*), you will see three switches labelled engine run, field generator and control & fuel pump, set all three switches to the on position (*or upward*).
17. Turn on the ditch lights, gauge lights and set the headlights to bright.
18. Check the brake stand and ensure the cut-off valve is set to freight.
19. Check the MU-2A Valve and ensure it is set to 'Lead or Dead'.

A cold and dark locomotive starts with no air in the brake pipe, so this must now be pressurised.

1. Leaving the reverser in neutral, move the throttle to notch 1. You will hear the engine rev up and on the left-hand gauge of the two brake gauges, you should see the red needle (*denoting the main reservoir pressure*) rising, and on the right-hand gauge, the red needle (*denoting the brake cylinder pressure*) also rising as the air is immediately fed into the locomotive's brake system. Wait for the main reservoir to reach 140psi.
2. Check that the independent brake is set to its maximum setting (*full on*).

3. Release the automatic brake, you should now see the white needle in the left hand gauge (*denoting the equalising reservoir pressure*) rise, and the white needle in the right-hand gauge (*denoting the brake pipe pressure*) rise behind it. Once both of these needles reach 90psi, the air brake system is ready for service.
4. Move the throttle back to notch 0.
5. Step out to the front of the locomotive and release the handbrake.

The locomotive is now ready for operation by setting the reverser to your intended direction of travel. All you need to do now is release the Independent Brake and apply throttle as required.

Safety Systems – Alerter

The **Alerter** is a straightforward Driver Vigilance Device and its purpose is simply to ensure that the driver is constantly aware of the train and able to react and respond to the train in a timely manner.

How to Activate / Deactivate – ACS-64

On the back wall of the cab there is a switch that turns the alerter on and off.

Alternatively, while sat in the engineer's seat of either cab you can press **SHIFT-ENTER** to toggle the alerter state.

How to Activate / Deactivate – GP38-2

On the rear wall of the cab, open the fuse cabinet and find a fuse switch marked Warning Devices. Click the switch to the 'on' position to enable the alerter.

How to Use

Once activated, every 60 seconds the alerter will trigger a visual indication on the Train Operator Display and an audible alarm. You then have a short time in which to respond to it by pressing the acknowledge button, the **Q** key on the keyboard or the **B** button on the Xbox controller.

If you do not respond in time, the train will apply penalty brakes until the train has stopped. You will not be able to take any further actions until the train has stopped. Once it has come to a complete stop, you should reset controls to normal state (*throttle to minimum, reverser to neutral, brakes to full service*), you can then release the brakes and continue.

Safety Systems – ATC

Automatic Train Control is a signal-based cab signalling and train control system. Its purpose is to inform the engineer of the Maximum Authorised Speed (MAS) at any given time while operating on the route. As signal indications change they will be reflected on the display unit to the right of the main Train Operator Display.

Note: that ATC will only have any effect if the signal indication is not clear/green – while the signal is clear/green there are no limits imposed by ATC. See ACSES for how this situation is managed.

How to Activate/Deactivate

Press **CTRL-ENTER** to toggle the ATC and ACSES safety systems together. It is not possible to operate them independently from the keyboard.

You can also find a switch for the ATC on the back wall of the cab.

How to Use

As you drive, monitor the ADU for signal aspects and Maximum Authorised Speed. If the signal aspect changes in either direction (*faster or slower*) there will be an audible alert.

You have 5 seconds to respond to the alarm, begin slowing the train and reach 0.5 metres per second deceleration. Once the train is slowing at 0.5 metres per second per second the “**SUPPRESSION**” indicator on the ADU will begin to flash and you will have a further 5 seconds from this point to increase your braking to reach 1.5 metres per second per second deceleration. Once you reach 1.5 metres per second per second the “**SUPPRESSION**” indicator will stop flashing and be on continuously and you can continue braking now until you are within the MAS. Once within the MAS, release the brakes and continue your journey.

If you fail to achieve any of the targets outlined above, the train will engage a penalty brake application.

In the event of a penalty application, you will not be able to take any further actions until the train has stopped. Once it has come to a complete stop, you should reset controls to normal state (*throttle to minimum, reverser to neutral, brakes to full service*), you can then release the brakes and continue.

Note: The cab signal indications shown on the cab represent the last indication that you passed, i.e. they are the signal indication you are currently within, they are not advance notice of the upcoming signal indication.

Safety Systems – ACSES

ACSES, the Advanced Civil Speed Enforcement System, is a form of Positive Train Control (PTC) that takes a much greater role in the safety of the train. While ATC has a very coarse view of the road ahead based on the signal aspects it receives and shows to the engineer, ACSES adds a clear view of all the speed limits along the line and any temporary speed restrictions that are in place.

ACSES will guide the engineer down to speed reductions using a gradual change of Maximum Authorised Speed and the engineer need only follow this to achieve an optimum and safe speed.

How to Activate/Deactivate

Press **CTRL-ENTER** to toggle the ATC and ACSES safety systems together. It is not possible to operate them independently from the keyboard.

You can also find a switch for ACSES on the back wall of the cab.

How to use

As you run along the line, simply monitor the Maximum Authorised Speed and ensure that you are within it at all times.

As you approach a speed reduction, the *“Time to Penalty”* indicator will start showing a number of seconds until the penalty brake will apply. Begin slowing the train and keep this above zero while noting the MAS as it begins to reduce. You cannot exceed the MAS at all, and should use the Time to Penalty to predict changes.

For example, if you’re running at 45 mph in a 45 mph section with 45 on the MAS then you’re within limits and will be fine. As you approach a 30 mph limit however what would happen is that the MAS drops to 44 mph and you’re immediately running over speed and will get a penalty application. Watching the Time to Penalty, at some point prior to the reduction in the MAS the Time to Penalty would have started counting down to the moment that the MAS begins to reduce, so you would then begin to slow the train away from 45 mph.

As you slow the train, you will see the Time to Penalty adjusting – if you’re over braking away from the ideal deceleration curve the Time to Penalty will increase, and if you’re under braking towards the ideal deceleration curve then it will decrease. Try to remain consistent as you slow to provide a smooth, efficient and safe ride for passengers.

There is an audible alert once the Time to Penalty starts showing a value, and a

further audible alert when the MAS begins to change (*in either direction*). If you fail to achieve any of the targets outlined above, the train will engage a penalty brake application.

In the event of a penalty application, you will not be able to take any further actions until the train has stopped. Once it has come to a complete stop, you should reset controls to normal state (*throttle to minimum, reverser to neutral, brakes to full service*), you can then release the brakes and continue.

Passenger Door Controls

In Train Sim World: NEC New York, you can control the passenger entry and exit doors on each side independently i.e. either left side or right side. A simple method of control has been implemented for the ACS-64. Simply press the TAB key to call up the menu and select on which side of the train you wish to lock/unlock the doors.

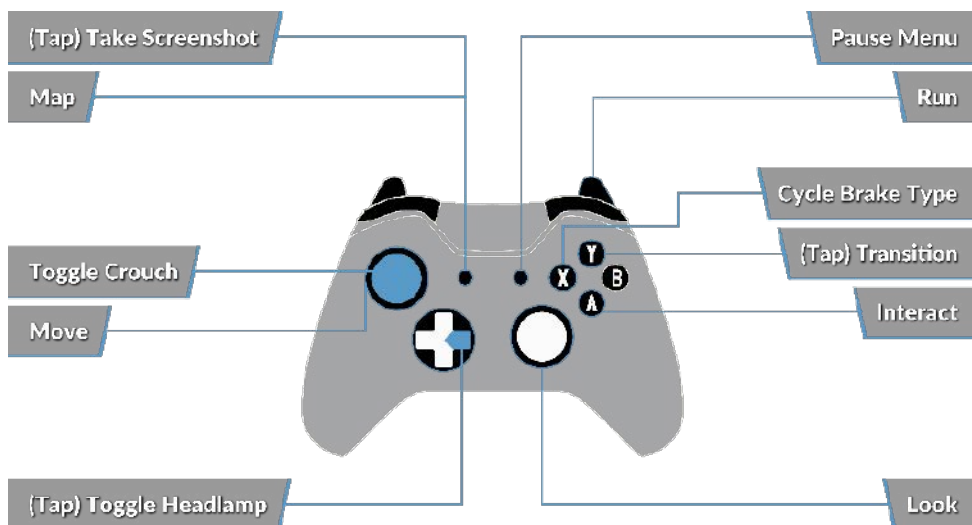
On the ACS-64, you cannot directly interact with the passenger car doors because this is normally controlled from the passenger cars themselves, so you must use the TAB key to cause the doors to open/close.

Controls / Input Devices

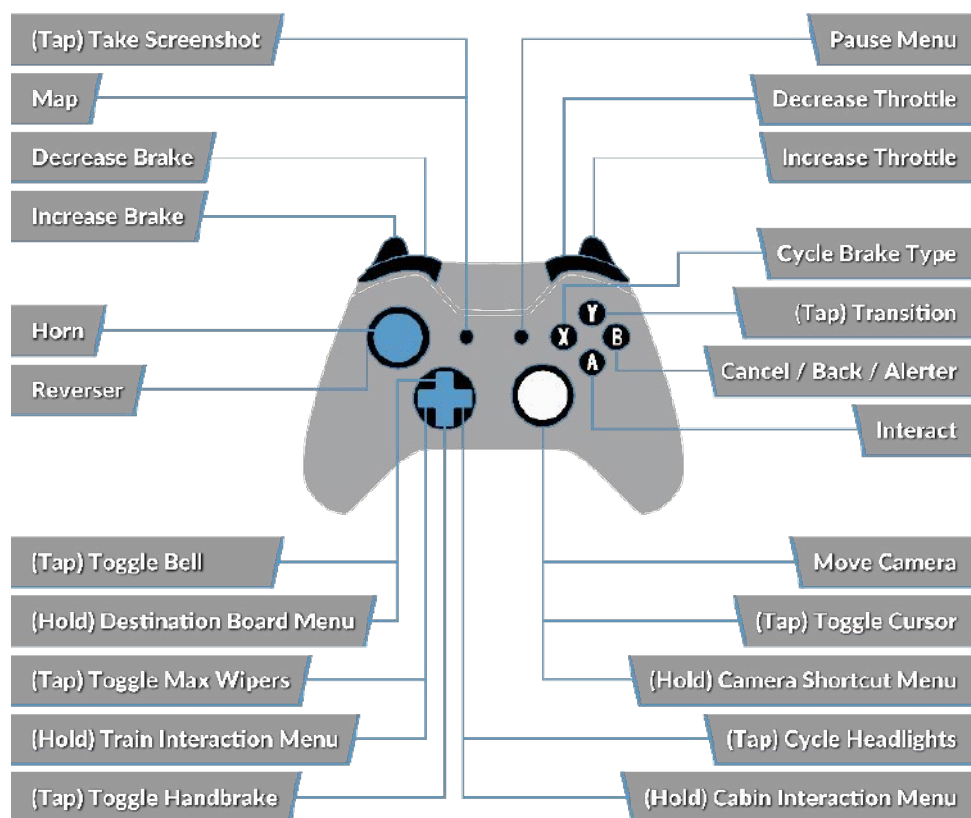
Input devices like the controller and keyboard take on different functions depending on what you are doing.

| Mode | Notes |
|---------------------------|--|
| First Person | When walking around the world in first person, this is the mode that is active. |
| Diesel Locomotive Driving | While you are sat at the controls of a diesel locomotive, this is the mode that is active. |
| External Camera | If you are driving a locomotive and opt to move to an external view camera, the system will behave in this mode. |

Controller - First Person Mode



Controller - Locomotive Mode



Keyboard - First Person Mode

| | |
|------------------|---|
| W/A/S/D | Walk forwards, Backwards, strafe left and right |
| C | Crouch |
| E | Interact with ladder, stairs etc. |
| L | Toggle headlamp/torch |
| Shift | Run |
| Mouse move | Turn, look up/down |
| Mouse left click | Interact |

Locomotive Controls

| Name | Keyboard | | Controller | |
|---------------------|--------------------|------------|--------------------|--------------------|
| | Increase/ Press | Decrease | Increase/ Press | Decrease |
| Throttle & Brake | A | D | Right Trigger | Right Bumper |
| Reverser | W | S | Left Stick Up | Left Stick Down |
| Auto Brake | Apostrophe | Semi Colon | Left Trigger | Left Bumper |
| Headlights | H | SHIFT + H | D-Pad Right (Hold) | D-Pad Right (Hold) |
| High Horn | Space | | Left Stick Click | |
| Low Horn | N | | | |
| Master Switch | CTRL + W | | | |
| Alerter / ATC Reset | Q | | B | |
| Pantograph | P | SHIFT + P | | |
| Sander | X | | | |
| Cab Light | L | SHIFT + L | | |
| Handbrake | \ | SHIFT + \ | | |
| Emergency Brake | Backspace | | | |
| Wipers | V | SHIFT + V | DPad Up | |
| Toggle Alerter | CTRL + Enter | | | |
| Toggle ATC | SHIFT + Enter | | | |
| Toggle ACSES | SHIFT + Enter | | | |

Controlling the Camera & Camera Modes

Train Sim World: NEC New York includes a number of cameras for you to control, here's an outline of those cameras and some examples of use:



First Person Camera or Cab Camera

Use this camera to operate your locomotive, flip switches and handle all your cab controls.



Boom Camera

Just like the camera from Train Simulator, your camera extends outward on an invisible pole, you can rotate it around your focussed vehicle. Use **CTRL + Left & Right** Cursor keys to switch between vehicles or press the **2** Key again to switch between the front and rear of your consist.



Floating Camera

A new camera that allows you to freely look in all directions, useful for coupling and changing switches. Press it once to view the front of your consist and again to view the rear. Freely move your view using the cursor keys.



Free Camera

Freely move around without limits using this camera. Use this camera to navigate your way around a busy yard, change switches or position it to get the perfect screenshot.

Customising the HUD

Train Sim World: NEC New York includes many options for you to customise the Head Up Display (HUD):

| Control | Function |
|----------|---|
| CTRL + 1 | Toggles the in-world objective marker |
| CTRL + 2 | Toggles the in-world next speed limit marker |
| CTRL + 3 | Toggles the in-world next signal marker |
| CTRL + 4 | Cycles the next speed limit / signal information panel in top right |
| CTRL + 5 | Toggles the speedometer panel (or clock/compass while walking) |
| CTRL + 6 | Toggles the Score Display |
| CTRL + 7 | Toggles the passenger stop marker on the track |
| CTRL + 8 | Cycles the centre dot transparency (off, 50/50, white) |

Introducing Train Sim World®: Rapid Transit



Train Sim World®: Rapid Transit is an all new First-Person Simulator that brings to life the experience of S-Bahn commuter passenger trains on one of Germany's commuter railways.

Powered by Dovetail Games' new SimuGraph® vehicle dynamics engine and Unreal Engine 4® technology, Train Sim World uses real world data to accurately replicate the performance, sounds and feel of real trains. Master the DB BR 442 Talent 2 in and around Leipzig S2 as you ensure commuters get to their destinations. Catering for players of all ability levels with accessible tutorials for beginners and advanced procedures for experts.

An Introduction to the Leipzig S2 S-Bahn

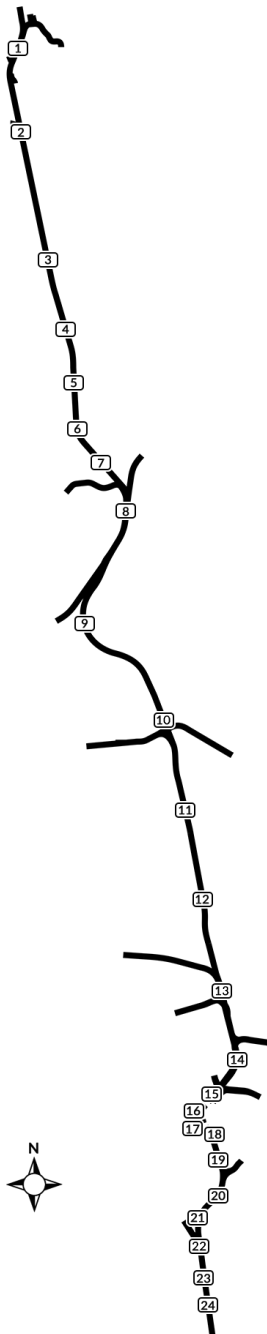


Originally formed from two separate networks, the Halle and the Leipzig S-Bahns of 1969, which were then lined in 2004, the reformed S-Bahn Mitteldeutschland was established following the completion of the Leipzig City Tunnel in December 2013. The new tunnel, which started construction in July 2003, unlocked service potential through the centre of Leipzig with all S-Bahn lines serving the 4 brand new underground stations, all of which are uniquely detailed. The exact definition of where the S2 Line runs has changed multiple times since the inception of the Mitteldeutschland S-Bahn, today however it covers the 70+ kilometre route from Markkleeberg-Gaschwitz, a station south of Leipzig which opened in September 1842, and Dessau Hauptbahnhof, 177 years old and a terminus of the S-Bahn Mitteldeutschland since December 2015.

With a modern network would come modern traction, and with the start of the S-Bahn Mitteldeutschland, a fleet of 51 Bombardier 'Talent 2' EMUs was ordered to run on the S-Bahn lines, including the S2. The majority of the Mitteldeutschland S-Bahn Talent 2 fleet, which is classified as the DB BR 1442, is formed of 3 articulated coaches, which often run in pairs to form 6-car sets in the busy hours. These Talent 2s are quite different in respect to most other German examples, as they are resplendent in a sleek sliver livery.

There is little doubt of the Talent 2's popularity, over 360 have been ordered since they started production in 2008, and they offer the latest in ergonomics, diversity and safety; in fact, their nickname of "Hamsterbacke" (Hamster Cheeks) is derived from their characteristic, crash-optimised cab design. With an operating speed of 160 km/h, the Talent 2 EMUs are ideally suited to commuter operation, and are perfect for working the Mitteldeutschland S-Bahn.

Leipzig S2 S-Bahn Route Map



| | |
|----|---------------------------------|
| 1 | Dessau Hbf |
| 2 | Dessau Süd |
| 3 | Marke |
| 4 | Raguhn |
| 5 | Jeßnitz (Anh) |
| 6 | Wolfen (Kr Bitterfeld) |
| 7 | Greppin |
| 8 | Bitterfeld |
| 9 | Petersroda |
| 10 | Delitzsch unt Bf |
| 11 | Zschortau |
| 12 | Rackwitz (b Leipzig) |
| 13 | Leipzig Messe |
| 14 | Leipzig Nord |
| 15 | Leipzig Hbf (Tief) |
| 16 | Leipzig Markt |
| 17 | Leipzig Wilhelm-Leuschner-Platz |
| 18 | Leipzig Bayerischer Bahnhof |
| 19 | Leipzig MDR |
| 20 | Leipzig-Connewitz |
| 21 | Markkleeberg Nord |
| 22 | Markkleeberg |
| 23 | Markkleeberg-Großstädteln |
| 24 | Markkleeberg-Gaschwitz |

The Game Modes

Tutorials

Tutorials give you the knowledge you need to get the most from your locomotives and trains via interactive lessons that teach you key concepts. If you're new to Train Sim World, we recommend you start here to learn the fundamentals.



Scenarios

Provides a selection of operations over the Rapid Transit Leipzig S2 route, Scenarios are objective based activities which provides unique experiences. Put your skills to the test mastering the busy Leipzig S2 S-Bahn railway in Germany.



Services

Provides a host of activities throughout an entire 24-hour time period, Service Mode is a new way to play. There's always something to do with a large variety of services to take control of or ride along with. Sit back and enjoy the action and capture amazing screenshots, hop on or off and ride along with the various services as they go about their duties or take control and carry out the duties yourself. Featuring over 80 individual services, you'll always find something going on.



An Introduction to the DB BR 442 Talent 2 EMU

The DB BR 1442 'Talent 2', known more common simply as the DB BR 442, was first introduced onto European soil in 2011 as an evolution of the previous 'Talent' electric and diesel multiple units. Despite sharing names however, the two families of units are most distinct with the Talent 2 offering improved crash safety, better performance, and all-round more widespread service potential.

The original Talent was designed by Waggonfabrik Talbot, however Bombardier would acquire the company before any construction would begin, and subsequently, Bombardier also oversaw the development of the brand new Talent 2, which began production in 2008. Like their predecessors, the Talent 2 family quickly proved popular, with hundreds ordered, and delivered, for operation throughout Europe.

It's all in the name; Talent of course alludes to particular skills or natural abilities, however in the case of the unit family, it is also a clever anacronym of TALbot LEichter Nahverkehrs Triebwagen, or Talbot light suburban railcar, and the Talent was sought out by many. The units range anything from 2 to 5 cars in length, and can easily achieve a maximum speed of 160 km/h, sailing past their predecessors' previous limit of 140 km/h.

The Talent 2s are also smooth, sleek and safe; shared Jacobs bogies allow for a lesser impact on the rails, keeping things quiet and comfortable for the passengers, all while reducing drag and improving efficiency, and ensuring the units stay upright in any derailments. They are also safe from a front-end point of view, the crash-optimised cab is designed to cushion impact, but it is this distinct detailing that earned them the nickname of "Hamsterbacke" (Hamster Cheeks).

As the Leipzig-Halle S-Bahn was set to be transformed into the Mitteldeutschland S-Bahn, with the opening of the Leipzig City Tunnel, a new fleet of rolling stock was required which met all the tunnel safety regulations, unlike older traction. Attention turned to the Talent 2 family, and at the cost of about 200 million Euro, an order for 51 EMUs was placed. Classified as the DB BR 1442, they entered service on the Mitteldeutschland S-Bahn lines in August 2013.

A total of 36 of the Mitteldeutschland S-Bahn DB BR 1442s are formed of 3 articulated coaches (as the 1442.1 subclass), which double up to form 6-car sets in the rush hour. Across all the lines, the daily ridership averages at 57,000, meaning the Leipzig City Tunnel in particular feels the pressure in the peaks, a pressure alleviated with a frequent timetable of Talent 2 action.



Quick Start Guide: BR442 Talent 2

1. Enter the leading cab
2. On the back wall, hold the battery switch labelled "Batterie" to Ein for 4 seconds and then release.
3. Observe the "Lampentest Schaltschrank" light is now lit.
4. To run with PZB and/or SIFA safety systems enabled, toggle the PZB Störschalter and/or SIFA Störschalter switches to Ein appropriately.
5. Sit in the Driver's seat
6. Turn the Master Switch to the ON position
7. Raise the pantograph by using the Pantograph Height Control Switch
8. Turn on the main circuit breaker by Main Circuit Breaker Switch
9. Ensure that the brake cylinder is showing pressure, indicating that the brakes are applied, it should be showing around 3 bar when stationary.
10. Press the Handbrake Release button.
11. Ensure the Throttle/Brake lever is set to the central position.
12. Move the Indirect Brake Lever to the release position.
13. Set the headlights to the correct position.
14. Move the Reverser Switch to the forwards direction (marked "V" on the switch label).
15. Open the doors left or right as required. Door controls for each side of the train can be controlled independently. Interaction with the door system can be achieved by using the TAB key on the keyboard and selecting the appropriate option. If the doors are open, a relevant option to close and lock the doors will be available. **Important Safety Notice:** Care should be taken to ensure the correct doors are unlocked, only unlock doors that are adjacent to a platform. For reference, the left side relates to the left side when facing the direction of travel.
16. Once it is time to depart, press the button to close the doors and wait for them to finish closing. Push the Throttle/Brake lever to release the brakes and apply throttle, the unit should begin to pull away.

Safety Systems – SIFA

SIFA is short for Sicherheitsfahrschaltung, or “Safety Driving Switch”.

SIFA is a straight forward Driver Vigilance Device and its purpose is simply to ensure that the driver is constantly aware of the train and able to react and respond to the train in a timely manner. It is similar in purpose to the DSD in the UK, and the Alerter in the USA.

If “SIFA” is visible on the central MFD with a yellow background it means that SIFA is not enabled. Once enabled via a switch on the back wall or pressing SHIFT-ENTER, this indication will be removed and be simply an empty white box.

When driving with SIFA enabled, after a period of time the indicator on the MFD will come on (black text on a white background), press the SIFA reset key (by default, this is Q on the keyboard or the B button on the Xbox controller). If the driver fails to respond to the visual notification, a few seconds later there will be an audible alarm which can still respond to in the same way without any penalty.

If, after a few further seconds there has not been a response from the driver, the train will apply emergency brakes and come to a full stop. If the alarm is then acknowledged while the train is slowing down, the brakes can be released and then continue on with the journey without having to come to a complete stop.

If the train has come to a stop from a SIFA alarm simply acknowledge the alarm and then release the brakes and proceed.

Press the SIFA reset key any time and this will reset the SIFA timer.

The SIFA visual indication is also present on the HUD.

Safety Systems – PZB

PZB stands for Punktformige Zugbeeinflussung. Loosely translated to English this means "Intermittent Train Protection".

The PZB system is enabled by operating a switch on the back wall, or by pressing CTRL-ENTER.

PZB is a safety system that operates via a series of three types of track balise magnets at various key points along the line. The purpose of the system is to ensure that the driver operates the train at an appropriate speed for the conditions that are ahead, such as approaching a speed reduction or a stop signal. There are three controls that are used in order to interact with PZB:

| German | English | Key |
|-------------|------------------|-----------|
| PZB Wachsam | PZB Acknowledge | Page Down |
| PZB Frei | PZB Release/Free | End |
| Befehl40 | PZB Override | Del |

There are three types of PZB programme that can be selected on most trains, however on the Talent 2 it is hard coded to only use "Type O" for Passenger trains. The type reflects the speeds that should be adhered to at various points.

PZB is implemented via three types of magnet:

| | |
|---------------|-------------------------------------|
| 1000hz Magnet | 1250 meters from obstruction/signal |
| 500hz Magnet | 250 meters from obstruction/signal |
| 2000hz Magnet | At the obstruction/signal |

Magnets are only active if the signal they are protecting is showing a non-green aspect, they are also sometimes used on fixed posts such as speed reductions where they will always be active.

How to Drive with PZB Enabled

Driving with PZB enabled can be a challenge for the new driver, pay full attention to the line ahead and know when to acknowledge a PZB event without any form of alert (visual or audible) in the cab, failure to do so in a timely manner will result in the train coming to a stop.

This is an example short journey that demonstrates the system in action, what the driver is seeing and what their reactions should be.

Start Program

From a standing start, with PZB enabled, the driver eases the combined handle forwards towards a green signal. When the speed reaches 5 km/h the PZB system switches to its "Start Program" and flashes the 85 icon, putting a 45 km/h restriction message on the screen. For the time being, the driver is limited to 45 km/h by the PZB Monitoring system, even if the line speed is higher.

The driver may now choose to release from PZB monitoring by pressing PZB Release (The END key), if they do this then the restrictions will be lifted and the driver can now proceed up to line speed.

The train is limited to 165 km/h under PZB control, faster than this requires a more advanced system called LZB that is not available on the Talent 2. Should the driver exceed 165 km/h the system will automatically apply brakes to bring it back to within that speed.

Stop Signal

The driver observes that they are approaching a yellow signal. Within 4 seconds of passing that signal, the driver must press PZB Acknowledge (Page Down, or B on the controller), and on doing this a 1000hz icon will appear along with an 85 km/h restriction message.

The driver must now slow to 85 km/h within 23 seconds, or the emergency brakes will apply.

After 700 meters the 1000hz light will go out and the driver should now observe the condition of the upcoming signal – is it still red? Or has it returned to green? If it has returned to green, the driver has an opportunity now to press PZB Release (the END key) to clear the 85 km/h restriction and return to line speed. If the driver releases the restriction and then hits the next magnet because the upcoming signal is still red then the emergency brakes will apply.

If the signal ahead is still at danger, the train will pass over the active 500hz magnet. This does not require an acknowledgement from the driver but the train must be travelling below 65 km/h as it passes over the magnet. It also imposes a further reduction to 45 km/h which must be completed within 153 meters. The driver should now pull up in front of the red signal. If the driver goes past the red signal, the system will be tripped by a 2000hz magnet which will always stop the train.

An alternative approach to this red light could be that the driver has been given permission to pass it by the signaller. In this instance, the driver must slow to below 40 km/h and hold the Befehl40 Override button down (the DEL key) as they go over the 2000hz magnet, this prevents it from triggering the emergency brakes.

Restriction

If the driver is under 1000hz or 500hz influence and brings the train to below 10 km/h for 15 seconds, or if they come to a complete stop, then a restrictive monitoring is enforced and this is visualised by the 85 icon now flashing and the speed limit being further reduced as indicated in the table below.

The following table shows the speed limitations that are enforced according to the types of magnets that are traversed:

| Normal Monitoring | | Restrictive Monitoring | |
|-------------------|------------------|------------------------|-------------------|
| 1000hz | 500hz | 1000hz | 500hz |
| 165km/h -> 85km/h | 65km/h -> 45km/h | 45km/h | 45km/h -> 25 km/h |
| In 23 seconds | In 153 meters | | In 153 meters |

If not in restrictive monitoring:

On approach to an active 1000hz magnet, ensure the train is below 165km/h and then drop speed to 85km/h within 23 seconds.

On approach to an activate 500hz magnet, ensure the train is below 65km/h as the train passes it and then drop speed to 45km/h within 153 meters.

If in restrictive monitoring:

On approach to an active 1000hz magnet ensure the train is below 45km/h.

Under restrictive monitoring the train must always remain below 45km/h.

On approach to an active 500hz magnet, ensure the train is below 45km/h and then drop the speed to below 25km/h within 153 meters.

Passenger Door Controls



In Train Sim World: Rapid Transit, you can control the passenger entry and exit doors on each side independently i.e. either left side or right side. A simple method of control has been implemented for the BR442 Talent 2. Simply press the TAB key to call up the menu and select which side of the train you wish to lock/unlock the doors.

On the Talent 2, you can also interact with the passenger doors by using the appropriate controls on the driver's control desk.

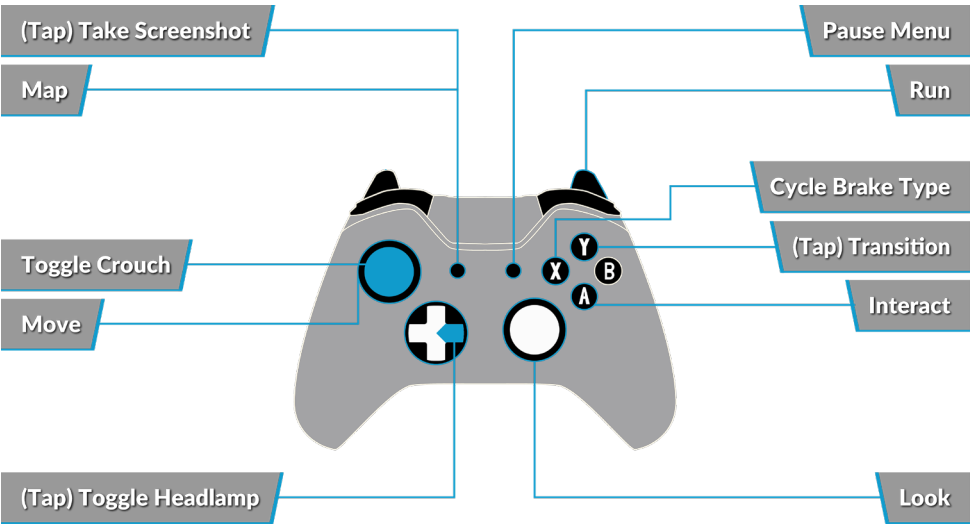
Once you have unlocked the doors, the passengers will be able to alight and board the train via any of the unlocked doors and care should be taken to avoid opening the doors on the wrong side of the train. A random length timer will begin to count down as shown in the indicator in the top-left of the screen. Once the timer has expired, you can then proceed to close the doors and proceed to the next station.

Controls / Input Devices

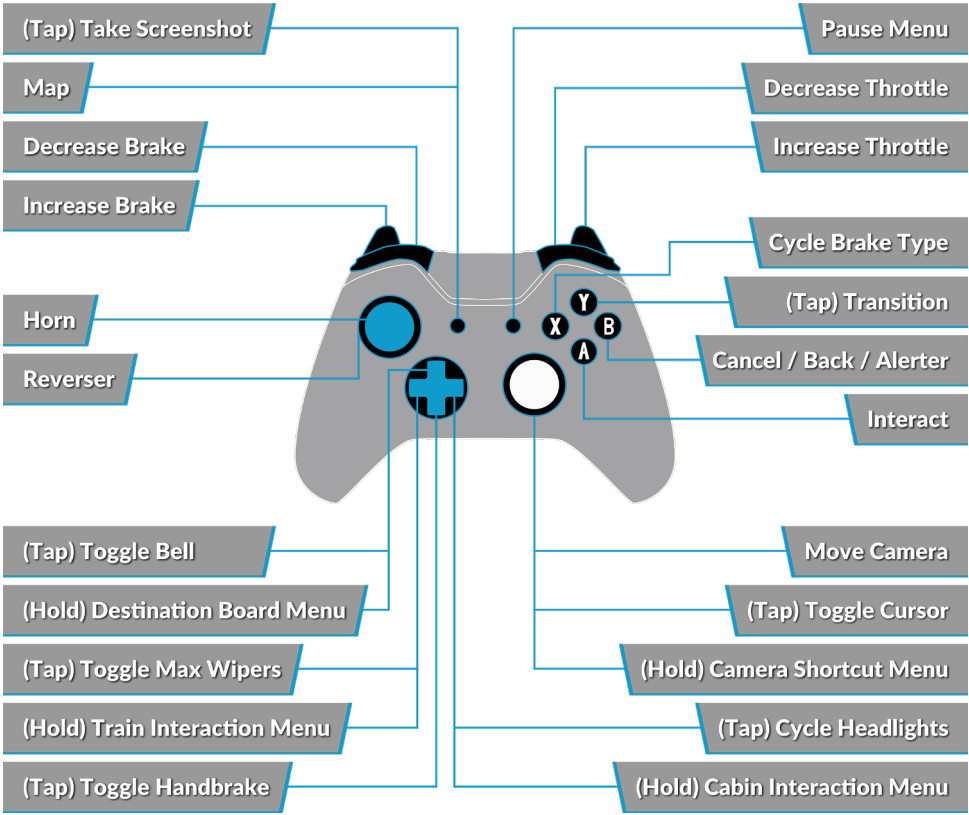
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| External Camera | If you are driving a locomotive and opt to move to an external view camera, the system will behave in this mode. |

Controller - First Person Mode



Controller - Locomotive Mode



Keyboard - First Person Mode

| | |
|------------------|---|
| W/A/S/D | Walk forwards, Backwards, strafe left and right |
| C | Crouch |
| E | Interact with ladder, stairs etc. |
| L | Toggle headlamp/torch |
| Shift | Run |
| Mouse move | Turn, look up/down |
| Mouse left click | Interact |

Locomotive Controls

| Name | Keyboard | | Controller | |
|------------------|--------------------|------------|--------------------|-------------------|
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| Indirect Brake | Apostrophe | Semi Colon | Left Trigger | Left Bumper |
| Headlights | H | SHIFT + H | DPad Right (Hold) | DPad Right (Hold) |
| High Horn | Space | | Left Stick Click | |
| Low Horn | N | | | |
| Uncouple | C | | | |
| Master Switch | CTRL + W | | | |
| SIFA Reset | Q | | B | |
| Pantograph | P | SHIFT + P | | |
| Sander | X | | | |
| Cab Light | L | SHIFT + L | | |
| Tempomat On/Off | R | | | |
| Handbrake | \ | SHIFT + \ | | |
| Emergency Brake | Backspace | | | |
| Wipers | V | SHIFT + V | DPad Up | |
| PZB Acknowledge | Page Down | | B | |
| PZB Release | End | | | |
| PZB Override | Del | | | |
| Toggle PZB | CTRL + Enter | | | |
| Toggle SIFA | SHIFT + Enter | | | |

Controlling the Camera & Camera Modes

Train Sim World: Rapid Transit includes a number of cameras for you to control, here's an outline of those cameras and some examples of use:



First Person Camera or Cab Camera

Use this camera to operate your locomotive, flip switches and handle all your cab controls.



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Customising the HUD

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| CTRL + 4 | Cycles the next speed limit / signal information panel in top right |
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| CTRL + 7 | Toggles the passenger stop marker on the track |
| CTRL + 8 | Cycles the centre dot transparency (off, 50/50, white) |

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