



TSW3 Advanced User Guide

Rudolf Heijink

Version 3.0



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Preface

Introduction

For a long time I thought it would be useful to create a starters guide for Trainsimulator, to make it easier to start using this game. I did not complete that project, but created a Starters Guide for TrainSimWorld in 2017. Now, we are at a point that TSW is replaced by a next generation, using the name TSW2. TSW2 is both familiar with TSW but also different. That is why I follow DTG and I created a new Starters Guide, specific for TSW2. This Guide will not cover DLCs and it only touches briefly on the routes that come with the core game. For Route DLCs I already created a number of Route Guides. Loco DLCs are included in the Route Guide they fit best with.

Images

Each chapter is introduced with a screenshot I made in game. In updated versions the screenshots will be replaced by newer ones, representing new content and features.

Acknowledgements

A big thank you to all community members that contributed to the contents of this guide. May will not be aware of their contribution, but lots of information comes from the community forums.

I definitely like to honor [Olaf the Snowman](#) for his knowledge on UK railroading and the willingness to share this with us.

Matt Peddesden contributed a lot, lately with his tutorial on braking, which I thankfully use as a source for this guide.

Frontpage image:

In game screenshot. Arosa Linie, the fully different RhB Anniversary pack delivers Xmas parcels.

Disclaimer

This guide is provided “as is” the author cannot accept any consequences from the use of this guide.

The contents is the sole responsibility of the author.

Contact

Comments are welcome at trainsimulator@hollandhiking.nl.

But please be aware that I cannot provide you help with your game issues. If you have any questions, please use one of the regular community forums.

Enjoy reading!

Rudolf Heijink

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1 Introduction

1.1 About this guide

Train simulation is a serious game with a fairly steep learning curve. For new Train simulation players I created the TSW3 Starters Guide, which covers the basics including the decision to buy this game. As you get more experience, there is far more to learn and discover. These advanced topics are covered in this TSW3 advanced user's guide. I will try to avoid repeating the beginner stuff and cover a lot of aspects in as much detail as possible.

1.2 Newsletter

At the website you now can subscribe to my free newsletter. It will inform you about new guides, updated guides and software updates. Just complete the form. Your mail address only will be used to send you this newsletter. You find the form here:

<https://www.hollandhiking.nl/trainsimulator>

1.3 Donations

In order to provide this content, I need to spend some money , e.g. the newsletter is not free, webhosting, additional tools and so on. I appreciate a one-time contribution of Euro 5,- (no need to repeat this or send more money). There is no obligation to do this, but I am grateful.

You can use this link, the QR code, or use the PayPal link at my website.

https://www.paypal.com/cgi-bin/webscr?cmd=_donations&business=LNBS2R49HBF6¤cy_code=EUR&source=url



1.4 You can help me

If you want to help me to create Guides or Tools, please contact me directly. I would love to form a small team. See the preface to find my email address.

1.5 How to read this Advanced User Guide

If you open this document using Adobe Reader, you can open the bookmarks tab at the left side. This will show you the contents of this guide and it allows you to navigate quickly.

This guide is a bit different from the Starters Guide. You will probably use it to look up information that is not covered elsewhere but you also may want to read a chapter to find out which knowledge you are still missing.

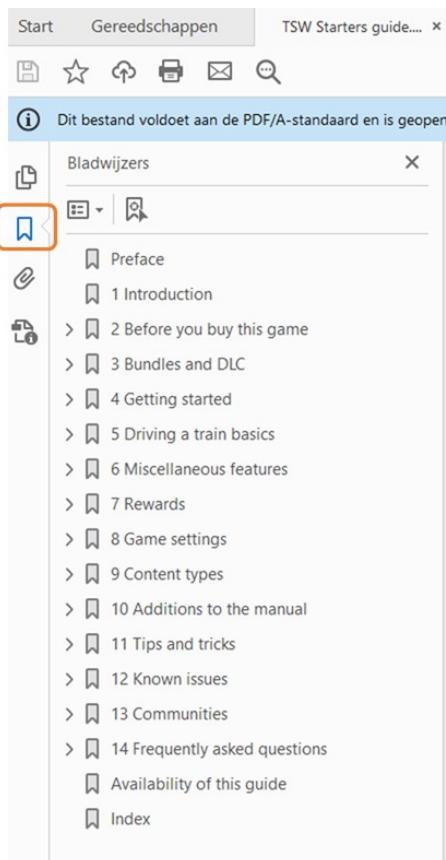


Figure 1 Bookmark button in Adobe Reader



2 Some background information

2.1 A brief history

TSW was developed as the successor or TrainSimulator. TrainSimulator is now named TrainSimulator Classic (TSC) and for a long time it seemed end of life, but it still has its fanbase and mainly due to the content creation tools and tremendous amount of content it is still played a lot. Recently DTG announced it will improve the underlying code to make it more robust and reliable, which opens the way to innovations as well.

TSW became available, I think somewhere in 2017. People may disagree with me, but I think essentially DTG did a good job. It runs far more stable than TrainSimulator and it has a number of features that people may take for granted, but that are new. This guide is about all these features, so I will try not to elaborate a lot on them here. Over the last years TSW was developed a lot further and it has a number of features the initial version did not have. I cannot resist to name a few, which are available in TSWxxxx:

- Passenger services
- Riding as a passenger
- Walking along the tracks
- High detailed worlds
- The layer system that adds drives and additional rolling stock if you own a combination of DLC.
- Console versions for XBOX and Playstation
- Safety systems, AWS, PZB, ATC and ACSES.
- Journeys
- Mastery

The problem is DTG did not manage to fulfil an number of urgent wishes, among them:

- A content editor
- Multiplayer

- Steam engines
- Virtual reality

DTG wanted to support the next generation consoles and that made DTG decide to move on to TSW2, which is a major update in using the Unreal Engine version 4.23 instead of 4.13. This update caused the need to update all DLC as well, which was not an easy task and took months to complete. They made the decision to start a new game instead and continue development from there. It gave a lot of criticism, because players were forced to pay for a new game (this was not really bad, you got two brand new and exciting routes for the price of one and a heavily upgraded Sandpatch route).

From there on, a lot of new smaller and bigger features are developed. For me the long awaited arrival of steam trains is an absolute highlight.

In 2022 DTG decided to move on again to introduce TSW3. It is a new game, which is annoying for the users because it again breaks continuity in gameplay. The main reason they gave was the separate tutorial environment they wanted to create (Training Centre). They also rebuilt large parts of the user interface, which makes it more intuitive and there are a number of changes in the weather and lighting.

2.2 A short review

In the gaming community there are a fair number of people that are very critical towards DTG and TSWx. In part this is justified, but when people speak about a bug galore and similar terms, this is not justified.

It is a complex game and some people blame the game for incompetence to play and get things working.

My very short review:

- TSW runs fairly stable, far more stable than the “old” TrainSimulator game.
- You can play most of the content without problems.
- You may or may not be happy with the amount of detail provided in the simulation. There are some technical limitations and of course the detail level is limited by development costs as well.
- Some people complain about the number of DLC. DLC will increase the game play and it is the business model for this game. Without DLC it would not exist. But you can just buy the DLC that are worth the money for you. In the long run, buying all DLC is not a good idea.
- There is a roadmap, showing what they are actually working on. Outside this roadmap there are no promises and that is good.

2.3 What is new in TSW

You may be surprised to see how many innovations were introduced in the game after its initial release. I just give a list here of the things I remember.

1. Adhesion simulation, in simple terms wheel slip. This should give us more realism when driving, especially with heavy freight trains uphill.
2. Support for 4k video, so higher resolutions
3. A better HUD, better instructions.
4. Scenario Planner, a tool you can use to set destinations and locos to create simple A to B scenarios.
5. Livery Designer, a tool to create your own liveries.
6. Driver Logbook. (still beta)
7. Train weights. Loaded trains will feel loaded.
8. LZB safety system
9. Passenger information systems both at the platforms and in the trains
10. Raildiver.

11. Steam engines
12. TrackIR
13. Mastery
14. Multiple timetables on a route.
15. Sound issues have a high priority to get fixed
16. Work is done on performance improvements. This is ongoing and needed so we can have more trains on a route and so on.
17. At the moment three third party development teams are creating their own content. More will follow.
18. Working Level crossings (not yet for all routes).
19. TVM and KVB safety system
20. ATC and ACSES safety systems are improved a lot.
21. Branded containers
22. Working level crossings and cars traversing track
23. Working elevators
24. Real world advertisements
25. Higher passenger densities, up to 200 per station.
26. Better skies and lighting
27. Overhead wire sparks
28. Lightning weather

I probably forgot a few developments. Let me know!

What this makes clear is that this game is not dead. About 100 people are working on it and the number is still growing. With each new route you see new features and there is a team to update existing content with

2.3.1 TSW platforms

TSW is available for PC, XBOX and PlayStation. Using a console may be an option if you cannot afford to buy an expensive game PC or if you prefer to play on a large TV screen using a controller. The last generation consoles performs as well as a good gaming PC, but for the older platforms functionality may be reduced a bit to allow a reasonable performance.

Points to consider for your choice:

1. **It is NOT possible to transfer game content between platforms/editions.** For each platform edition you need to buy the core game and all DLC again. Please be aware of this, it can be very expensive.
2. This also holds for the two game shops for PC, the Epic Games Shop (ESG) and steam. If you bought the game for ESG, you cannot mix it with content you bought at steam. On the other hand, you can run both editions at the same computer without problem, but they will be completely separate.
3. I love to use the XBOX controller also when playing at the PC, but I recommend to have at least a keyboard available when playing (if this is supported for consoles), but I am not sure this is a good solution to handle the controls in the engine. For this keyboard and mouse are more suitable.
4. TrackIR only works on the PC versions, because there are no drivers available for consoles at the moment.
5. Raildriver only works on the PC versions.
6. All DLC are available for console as well. In most cases additional content will be available for all platforms at the same day.
7. It is interesting to see how players are divided between the supported platforms. In the end of year Q&A DTG states that all three platforms are about equally important for business.

Major store locations:

Platform	Store	Url
PC, steam	Steam	https://store.steampowered.com/app/1282590/Train_Sim_World_2/
PC, EGS	Epic Games Store	https://www.epicgames.com/store/en-US/p/train-sim-world-2
PC, steam	DTG webshop	https://store.dovetailgames.com
PC, steam	Rivet webshop	https://www.rivet-games.com/products/
Playstation	Play Station Store Europe	https://store.playstation.com/en-gb/product/EP2866-CUSA19355_00-TRAINSIMWORLD21D/
Playstation	Play Station Store US	https://store.playstation.com/en-us/product/UP3004-CUSA19462_00-TRAINSIMWORLD21D/
XBOX	XBOX store	https://www.microsoft.com/en-gb/p/train-sim-world-2/9pbb13rrd77z#activetab=pivot:overviewtab

You may find some other stores as well, offering good discounts. Personally the DTG store is not very good, but sometimes they have discounts you will not find in other stores.

2.4 Upgrade options

Please be aware, that you will receive free copies of almost all DLC you own if you migrate to TSW3.

Exceptions are the old NEC Route, the GP38 loco DLC you could buy for Sandpatch and the Amtrak Switcher. These will not be upgraded for technical reasons.

If you do not want to upgrade, this is OK you can continue to play TSW2020 or TSW2.

2.4.1 TSW2020

For TSW2020 no further developments can be expected. You cannot buy it anymore and there are no DLC available.

2.4.2 TSW2

Fort TSW2 DTG will issue a small number of updates to the core game and to the DLC. You cannot buy new DLC anymore.

2.4.3 Upgrade to TSW3

TSW3 has a number of starter packs. At the moment of writing, you can choose from 13 different bundle options. So you need to have a good look at what you like. You should keep in mind that you get a free (Updated) DLC for each DLC you won in TSW2020 or TSW2. Also your game progress will be copied to a large extent, though it may be a bit of a hassle to get this done.

What is not working are your achievements/trophies. Progress is not transferred in general and in some cases you only can get them back if you create a new avatar and start over again. This is the case for completing tutorials and scenarios and for getting collectables.

2.4.4 Migrating progress

On PC the easiest and most reliable way of working is to copy the content from the TSW2/TSW2020 game save folder to TSW3.

In My Documents, you will find the folder My games and then TrainsimWorld2 or TrainsimWorld2EGS. Copy the contents of this folder to the folder named TrainsimWorld3 or TransimWord3EGS before you do anything else in the game.

For consoles, you need to rely on the official procedure. This tutorial may help you:

https://www.youtube.com/watch?v=gj_kPoHa4Q8&list=PLvUwWjZgALPVuLjkMpPcCVIEF9WO35zF3&index=17

2.5 Downloadable content

In addition to the core game you can purchase additional routes and engine packs, for which the generic name is “Downloadable Content” or DLC briefly. A complete list can be found here:

<https://store.steampowered.com/dlc/1944790>

2.5.1 Third party content developers

Most content is developed by DTG, but they use sub-contractors extensively. In 2021 a number of content developers are working on new content they publish using their own brand. They depend on DTG for their sales. I think the main reason is that DTG offers a lot of additional value publishing content on the various platforms.

The community reacts very critical to these content providers if they do not meet the high requirements. Bashing content developers is a wide spread activity at the forums. I think this is not justified. Developing content for TSW2 is another league than developing content for trainsimulator. Support from DTG has not been really good until now, but they have improved a lot. So I assume the quality will increase quite fast.

At present following providers are known:

Rivet games, well known by its Swiss content but they also create German and UK content. Rivet has its own consumer website, forum community manager and so on.

Skyhook. A UK company. We have seen German and US content till now. More to come.

TrainSimGermany (TSG) an one person business, but you will find Maik a lot at the DTG forums.

JustTrains, a UK company, which announced TSW content development end 2021.

Alan Thomson Simulations, also a UK company (as far as I know)

Union Workshop will likely develop Asian routes in future.

2.5.2 A taxonomy of TSW DLC

It is useful to understand a bit more about the different kinds of DLC, because it can be overwhelming for new players.

Route DLC. This DLC type will contain a complete route, including stuff you actually can play.

Loco DLC. This contains one or more locomotives and also may contain wagons. There always is gameplay for one specific route. Therefore, it is recommended you also get this route.

Gameplay DLC. This DLC type usually will contain some liveries for locomotives, it may add some scenery in scenarios and there are additional scenarios and in some cases timetable drives.

For a Loco DLC, till recently you needed to own a specific route, otherwise it would not even be visible in game. This restriction is removed now, but I am not sure if this is a core feature and holds for all DLC. An example is the Acela, which has scenarios for the Boston-Providence route, but if you do not own it, you still can use the services it adds to the New-York-Trento route.

The same holds for Gameplay DLC. A nice example of Gameplay DLC is the RhB Livery pack, which has six RhB liveries, but also some special Christmas scenarios, an open panorama coach and festive illumination for the Langwieser Viaduct.

2.5.3 DLC from earlier game versions

At some point you may read the term **Preserved Collection**. This indicates DLC that were originally developed for TSW2020 and ported to TSW2. Originally the intention was not to bring these routes up to the TSW2 standard, e.g. including support for Scenario Planner, Livery Designer passenger information systems and working level crossings. DTG changed its policy and all these routes are now at least at the TSW2 level and available in TSW3.

When TSW3 arrived, DTG ran into the same story. TSW2 routes do not have all newly developed features. You can recognize them in the store, by the text **TSW2 & TSW3 compatible** in the DLC title. In the small thumbnail (see the right side of the screen below) they also have a special logo:



You will be hardly able to read this and it will not be visible in enlarged images. Essentially it means that not all TSW3 features will be implemented.

2.5.4 Choosing what to buy

In the long run, it is pointless to buy all available DLC. You simply will not have enough time to play all content. So it is a good idea to have a clear view of what you really like. This little checklist may help you a bit:

Area	Choices to make	My choice
Do want present day or do you prefer history stuff?	Old/New/heritage line	
What type of traction do you prefer?	Diesel/Electric	
Do you prefer lower speed or high speed?	Slow/fast	
Which countries would you like? (At present limited choice)	Germany, UK, USA, Canada, France, Switzerland	
Which type of challenges	Freight, passenger, shunting	
Landscape types	Mountains, rural, cities, industry	

You can use the third column to make up your mind. Let me know if I missed important choices!

There is one more important thing to say. If you own a cluster of DLC, you will be rewarded by additional variation in rolling stock, you may get additional tasks you can do etcetera. At the moment, this is expanded most for the German routes. One example, if you bought the BR155 DLC, which belongs to the Ruhr-Sieg Nord, you can use the engine as will at Main Spessart Bahn, Rhein-Ruhr Osten and probably more routes. This holds for the line Köln-Aachen as well. For the UK routes, only the West Somerset Railway gets some additional content choices. For the other countries this is not (yet) applicable.

Tip: If you like to get a recommendation for which DLC to buy, please give the information in the checklist above. Just asking which DLC is the best one, will not help you. For a good advice you should make your question specific. And provide enough information about your taste. In general, there is no best route or DLC, so if you want anything better than a list of very various opinions, be specific.

Tip: scan through the reviews at steam. If a route is good, you can check by reading a number of reviews and you can judge if the comments are relevant for you.

Tip: watch some gameplay livestreams before buying. The preview streams are quite good and give you a view on what to expect.

2.6 TSW XBOX Collector's edition

If you own the XBOX collector's edition, you may read this message if you intend to buy TSW2 or TSW3.

<https://forums.dovetailgames.com/threads/preserved-collection-for-disk-owners-of-train-sim-world-xxxx.25166/>



3 Advanced gameplay

3.1 Booting the engine

There is no boot-procedure that always will work, because each engine is different but also the initial state in the game may be different. Fortunately the number of manufacturers is a bit limited, so it is possible to find some similarities. I will give some general comments here.

You may also have a look here:

<https://dovetailgames.freshdesk.com/support/solutions/folders/80000678884>

For many routes there are gameplay guides to explain basic setup. Usually not the advanced stuff, but it may help you out if you cannot recover from an emergency stop or you simply do not remember one of the boot steps.

3.1.1 UK trains

Not much special to say here. You need to insert some kind of master key (Ctrl-W), set the reverser and set the throttle. They may have a combined brake/throttle or a separate brake. In most case, the throttle is locked if the doors are open.

Additionally you need to set the rear lights, destination boards, headlights and passenger lights. You will find them somehow.

For a number of UK trains, you cannot set AWS just using the keyboard. You need to apply two settings:

1. Turn AWS on (in real life this is sealed and always on)
2. Set the changeover lever in the active cab. This
3. If you have done both properly, the AWS warning tells you it is working and you need to acknowledge.

The background for this procedure is that AWS should always be turned on, so you do not want drivers to mess with it, but they need to activate it for their own cab. You will find AWS either somewhere under a seat in the cab or at the back wall.

For some UK loco types you cannot use Ctrl+Enter to activate AWS. These locos have two levers at the AWS equipment: One to enable AWS (sealed in real life) and the AWS changeover lever, which you need to select to make sure you can handle AWS from your cab.

3.1.2 The class 101

The class 101, which you can find in a variety of elder UK routes is a bit more difficult. It has a gear, which you need to set. The keyboard combination is a bit weird, so I changed it to Page Up and Page Down keys. Page Down is also used for the German PZB system, but this does not cause conflicts.

For the class 101 you need to visit the rear unit to set the tail lights and destination boards.

In the driver cab in front of the second man seat you can set the passenger lights.

3.1.3 German locomotives

The normal procedure is straight forward.

In some cases you will need to activate the brake key. You will see this soon enough if you try to get moving and your brakes do not release, think of the brake key. If you have applied the brakes, and your traction remains locked (red square around the throttle position in the HUD), most likely your throttle is NOT in the off position where it must be.

For German Freight trains, if there is a loco at the rear of the train, turn on banking comm.

3.1.4 UK Metro trains (including Isle of Wight)

These have an additional step. At the left side very low at the wall, you may notice an Master Key. Ctrl+W will not work here.

Once you inserted it, you need to set the Master Key Lever to On. No you can use Ctrl+W in insert the reverser handle and set the reverser. It is a bit complicated to find the spot where you can activate it, because it is so close to the master key.

For these trains you normally brake using the positions EP Min, EP Normal en EP max. The other brake states use a different, less good type of brake you can use in case of trouble with the brakes.

In the passenger cab you can turn the passenger lights on or off.

For IOW you should not use Forward 2 for the reverser position for realistic driving.

3.1.5 US EMD locomotives

For the US EMD locomotives setup can be complicated. Play at least the tutorials. The initial states can be different, depending on loco and route, but the result should be the same:

- Engine Run, generator Field and Control and Fuel Pump must be ON
- The Cut-Off valve must be set to freight or passenger or just on
- The multiple Unit valve (MU Valve) must be set to lead or dead or something similar (It is either at the screen in front of you or near the console very low near the floor)

These settings hold for the first locomotive.

If you have a bunch of locomotives near the end of the train, make sure to switch on banking comm,

Setting up multiple units is far more complicated. Have a look at the Sandpatch Route Guide, where I explain how to do this.

Note the UK Class 66 is also an EMD locomotive and behaves in the same way in some aspects, but not all. For this locomotive you need to keep the brake in release position to charge the brake pipe.

3.1.6 US Metro trains

This applies to the Long Island Railroad and the Harlem Line.

When you start, you need to set the brakes in brake position 10. Then press ; (in most locomotives this will release the brakes) and let the brake system charge. It will take a few seconds only. If you hit the emergency brake or get a penalty brake, apply the same procedure.

The LIRR M3 has another weird thing. You can only close the doors when the throttle is in brake position 9 or 10.

3.2 Braking

Braking is the hardest part of your driving experience. There is a huge diversity in braking systems and in the way brakes will respond to your request. It is assumed you have the basic knowledge covered in the Starters' Guide, so this will not be repeated here. Instead, the finer details will be covered to some extent.

3.2.1 Brake timing

Freight trains are far more heavy than passenger trains. If you try to brake them very fast, you may get into trouble, because the last wagons will start pushing very hard to the wagons more in front of the train. This happens because the brakes will apply slowly through the train.

For passenger trains, you want them to brake faster, because they tend to have a higher maximum speed.

For many trains you can set the brake timing between passenger mode and freight mode. In most cases this is done for you, but it is good to check this.

Most US locomotives have selectable values for the cut-out valve. This valve has the same function as the brake key. It enables the driver to release and apply the brakes. You also may see a brake key, which has a similar function.

3.2.2 Vacuum Brakes or Air brakes

This is relevant to UK trains only. The older type is the Vacuum Brake. As the name says, the vacuum brake system maintains a vacuum in the brake system when the brakes are in released position. If air is released into the system, the brakes will apply.

Air brakes work the other way round, they need air pressure to keep the brakes released. As soon as you let the air out, the brake will apply.

Air brakes work faster and can accommodate longer trains.

Most wagons will have either air brakes or vacuum brakes, but locos may have both brake systems. There is a control that allows to choose the brake system. If you set it wrong, you have no brakes at all, or you simply cannot move the train.

This may be combined with the brake timing setting, so for a number of UK locomotives you can choose from four values:

- Air brakes passenger
- Air brakes freight
- Vacuum brakes passenger
- Vacuum brakes freight

At the West Cornwall Local route, the class 37 has some weird behaviour. On coupling/uncoupling it tries to select the proper brake mode automatically. This is not working well and very confusing. Always check for

the correct value after coupling/uncoupling. The brake settings is only in one of the two cabs for many UK locos.

3.2.3 Wagon brakes

Normally each wagon has its own brake and a hand brake as well. The hand brake is meant to prevent a stabled wagon to start rolling on a grade.

The first trains, did have hand brakes, but no brakes you could activate from the locomotive. In these days brakemen were spread over the train and upon a whistle signal from the driver they need to apply or release the individual wagon brakes (TSC still has trains simulation this behaviour). Maybe little later trains used to have a brake van, where a conductor could sit during the trip and which was used to brake the train from the rear.

A few wagons have the possibility to switch between air brake and vacuum brake. In the extremely long braking tutorial Matt Peddlesden shows how this works.

For Spirit of Steam the 16 ton mineral wagons do not have brakes, but they can pass the brake pressure. If you have braked wagons behind these unbraked wagons you need to adjust the vacuum for each mineral van before departure. I think this was a great feature. Unfortunately DTG adjusted the consists to remove this need.

3.2.4 Electric brakes

A number of locomotives has electric or dynamic brakes. Almost all modern electric locos do have them, but also the heavy US locos.

Electric, or dynamic brakes will only brake the locomotives, but set-up times are short and they are very powerful. These brakes work like a dynamo. An electric engine will convert mechanical energy to electricity. This electricity is absorbed and converted into heat or given back to the catenary.

A few important things to remember:

- Set-up time can be long. It takes 10 seconds to activate them once you turned off the throttle.
- Some locomotives have a combined power/brake handle.
- Modern locomotives combine the electric brake and the air brake, no need to think about which one to use for you.
- For the US freight engines, if you applied the dynamic brake, each time you change the settings for the air brake make sure to bail off the independent brake. This will completely release the airbrake at the locomotives. If you fail to do so, the dynamic brake will not work.
- For US locomotives the dynamic brake works well at low speed, 10-30 Mph. If you go faster, they will not work and you may end with a run-away train. (In TSW this is a realistic scenario).

For some locomotives you can select how you want to use the electric brakes. I do not have any more details. You may want to read this article:

<https://forums.dovetailgames.com/threads/nahverkehr-dresden-freight-timetable-explained.48953/>

It shows TSW has a lot of fully undocumented functions. If you have any information, please let me know.

3.3 Pick up passengers

To pick up passengers, make sure your whole train is along the platform. Once you stopped, you can open the doors. For some trains, there is not a button in the cab, because the guard/conductor will open the doors. In other cases, you first need to select which door to open and then you press some button to unlock the doors.

Note that in the US it is quite common to have very short platforms,. In this case just stop at the stopping point. The Boston-Providence route has a very short high platform to help disabled people in and out of the train. If you drive well, one of the doors will be just at this spot.

An interesting detail: in some UK trains you cannot open doors from the inside, only from the outside. In this case the procedure is to open the window and then you can open the door.

To open and close passenger doors, you can either use the in game controls in you cab, if they are available, or press the **Tab** key, which opens a small menu that allows you to open or close doors.

Note: you now also can use the **[Y]**-key to open the left side doors and the **[U]**-key to open the right side doors.

Modern trains will have traction locked while the doors are open. This means you cannot move the throttle. Before departing, make sure the throttle is in **Off position** and the brakes are fully released.

Tip: normally your stopping point is anywhere in the station area when you reach zero speed. For some routes and station this is not working. They stopping points behave like freight stopping points where you need to hit the objective marker.

3.4 Speed

Allowed train speeds range between 10 and 320 km/h. You are not obliged to drive at the maximum allowed speed.

3.4.1 Speed limits

The allowed speed is a composition of a number of rule types:

Track speed is the speed that is allowed by the tracks. This is what you see normally in the HUD.

Locomotive/wagon speed is a speed limit imposed by the type of train you are driving. Locomotives may have an upper allowed speed by design, e.g. the UK Class 66 has a train speed limit of 75 Mph. It may be explicitly displayed in the driver cab, but this is not always the case.

Also the **type of consist** may impose a speed limit. At the Kassel-Würzburg route, which is high speed the ICE1 can drive up to 280 km/h, the ICE3 is allowed for max 230 km/h but freight trains are limited to 120 km/h. In TSW sometimes the speed limit is set taking this speed limit into account.

Then there is **signal speed**. Depending on circumstances, signals may prescribe a much lower speed. This normally is not visible in the HUD, drivers are supposed to know the rules and stick to the rules.

We should not forget about **timetable speed**. In real life the driver may get instructions about the speed she/he is supposed to adhere to. This may have to do with other traffic, but you can think of other factors. You want to prevent a long wait before you can enter a station because the platform is still occupied. This does not feel as progress in their trip for passengers. The planner also may include some slack in the timetable. In TSW this slack may be present, but timetable speed is nowhere documented or enforced.

Normally you should not exceed the prescribed speed limit if the front of the train touches the start of the speed limit. The speed limit is valid till the rear of the train has left the restricted area. There are exceptions, London Metro (Bakerloo Line) allows to increase speed as soon as the front of the train touches the higher limit.

A way to find out if your train is completely clear is the **train length measuring device**. You need to know the train length and then you can set a counter that calculates how far you have driven. Otherwise, you just need to know or follow the limits shown in the HUD.

Finally, safety systems may impose additional speed restrictions. They may prescribe how fast you brake, what your target speed should be or just impose a speed limit. Sometimes this behaves really weird. For instance, you need to brake from 100 km/h to 70 km/h but when driving a heavy freight train in Germany, you first must reduce the speed to 55 km/h to comply with the safety system. The reason is the design of this system. Also ATC may show weird speed limits that are not consistent with the allowed track speed. I have no idea why this is done. Sometimes the imposed speed limit is higher than track speed.

3.4.2 Keeping the speed limit

In real life, you always need to make sure to be in control of your train. You must be able to stop in time for any red signal aspect and of course also at the stations. If it is not safe, or if it is very foggy and you cannot see the signals, reduce your speed.

The German PZB safety system is very prescriptive and describes in great detail how fast you should brake. I can assure you, if you drive 160 km/h you will have to reduce your speed to 85 km/h in time to please this system. So, you need to look ahead and use your brains

The actual train speed is influenced by a number of factors:

Throttle position. The throttle regulates the amount of power applied to the train. But, the engine may take a noticeable delay to respond. You can see this in the speedometer HUD or hear it, especially when you are driving a diesel locomotive. Be aware of this when driving cabcars. You will not get auditory or visual feedback, but your train may respond slowly to adjustments.

Braking of course has an effect. See the separate chapter on this topics.

Grades. If you drive up a hill, you will notice that you are losing speed fast. If you go down, you can in many cases close the throttle and just use the brakes. On top of a hill be aware that the front of the train may go downhill, but the rear is still going uphill. You really need to apply the brakes at the right moment

If you act too slow, you will be overspeeding, if you act too careful, you will not be able to keep the schedule. Practicing a lot is very helpful.

3.5 Signalling

By now you may realize that there is a large diversity in signalling, as there is in all other train driving aspects.

Signalling is about other trains that may be at your track, speed limits, marking potentially dangerous situations (the top fun aspect is the signal telling you to use the horn). The departure order as given by the guard is a signal as well.

3.5.1 Basics

Let's talk here about the most visible aspect of signalling. The signals you see along the track. The two main variants are semaphore signals (today still in use!) and light signals.

In principle, the route manual should provide you with some information on signalling specific for the route you will drive. You may drown easily in the details of the rules, so if you do not remember all right away, if you know about the five rules below, not too much can go wrong, though your drive may not be optimal.

1. If you see **green**, proceed. (**Note**, for German routes the HUD may show green, where you actually should slow down).
2. If you see **yellow**, slow down and prepare to stop
3. If you see something **flashing**, slow down
4. If you see **red** combined with **other colours**, slow down, it is likely you must stop soon.
5. If you see **red only**, never pass, unless you got explicit approval. Doing otherwise is "game over" in TSW.

There may be a lot of other types of guidance for your behaviour as well. Most important are speed limits. Normally these should be announced in advance and you must adhere to them. You also must adhere to the maximum allowed speed of your train and sometimes your train is so heavy that it has a long braking distance which you need to take into account.

3.5.2 Passing a signal at danger

The game will end as soon as you pass a signal at danger. If this happens to you, from the menu it may be possible to load the "last checkpoint". This is an automatic game save, but be aware it will not be preserved if you close TSW2 and restart later. It also will not be available before the first stop. Also, be careful, this will not always save you. The save function in TSW2 is complex and in many cases not working properly.

If you stop before a signal showing stop (RED in the HUD), you may want to ask permission to proceed anyway. You do this by pressing the TAB  key. This brings up a menu as shown in Figure 2.

3.5.3 Cab signalling

If you drive at a very high speed, visible signals along the tracks no longer work that well, you simply see them late and braking will take far too much time. Combined with safety systems this lead to the development of in cab signalling. You no longer need signals along the tracks, but you have a display in the cab that tells you what to do. In most cases these signals will impose a speed limit, eventually combined with the obligation to start braking. I think the German LZB is very advanced. You can combine it with a cruise control and the brain will adjust the speed as needed till the maximum allowed speed you, the driver set. To be honest, this is really boring, but keep in mind you are still responsible for safety of the train.

3.5.4 Some different ways to apply signals

If you drive at a high speed, you cannot stop in time if you encounter a signal with a stop signal aspect. There are two ways to solve this.

In some countries, you have one type of signal. If you approach a red signal, the signal before this one will show a yellow aspect and tells you to slow down. The distance between signals is relatively short. You find this in the Netherlands, but also for the light signals in the UK.

The other way to solve this is to place advance warning signals. The UK Semaphore signals work like this, but also the German signals. You get a signal placed at braking distance before the main signal. You are supposed to start braking as soon as you see this signal, if you wait till you arrive at the signal you may not be able to brake in time.

Be aware that such an advanced signal may cover two main signals. So you may encounter a situation where the first main signal shows a green aspect and the second, shortly after it shows a red aspect. You will not find this in the manuals, but it may result into a fatal end of the journey (source: Matt Peddlesden live stream Peak Forest route) preview.

In Germany the advance warning signal may show a white light. This means that if you drive at full speed now, you cannot brake in time. This always will be a second advance warning signal.

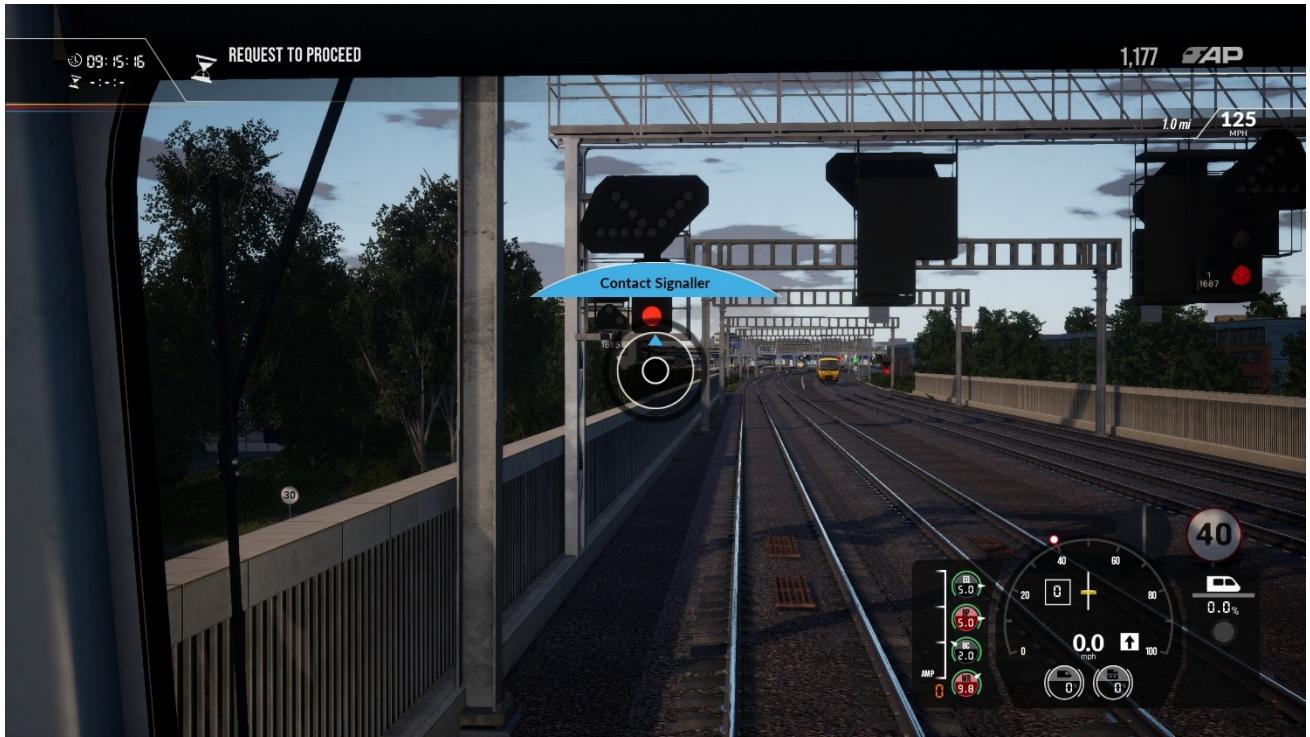


Figure 2 Menu to get permission to pass signal at danger.

Sometimes, you need to contact the signaller, to get permission to pass a signal. This happens mostly while shunting, but it also may occur if you want to enter or leave a yard. Normally you will get some kind of permission, or you get the instruction to wait for the next block to get cleared. In rare circumstances there is a bug in the service (most are solved now).

Make sure use the correct driving direction. If you reversed, you may need to drive a little bit to get permission for the correct signal. If you drive too fast then, or stopped at a very short distance, the signaller may not respond in time.

Note: Pressing Tab to bring up a menu is not very immersive. Many locos now have devices like a walkie talkie, a phone or the radio device at which you can click to contact the signaller. Also some routes have phone boxes near signals that allow you to contact the signaller.

If anything blocks your way, the game will deny the permission. If it says "No route available" there may be something wrong seriously. You can check if there is anything blocking the route and if you set all switches properly. If that is not the case, you can first try to save the game, go to the main menu and then load the saved game again. If this is not working, you will need to restart the service, because there is some bug in the service.

3.5.5 Sharing a block

Most common is the situation there can only be one train in the area between two signals (also called a block). For some routes/countries this does not hold. For example, the Harlem Line allows two trains to be in the same block. The second train will get a 15Mph signal speed limit imposed by the cab signalling, but it is allowed to proceed slowly just behind the train in front of it. Horseshoe Curve has a similar feature, but there is no cab signalling.

3.6 Safety systems and driving aids

Trains are heavy and, because they are bound to track not very flexible. Therefore train accidents may have serious consequences. To improve safety, a number of driving aids have been introduced in course of time. These aids can be very different, depending on country and era. Also the impact can be very different. Using them increases realism and may keep you busy. By default in TSW2 all safety systems are turned off.

If you are a new player, this is OK, leave it for a while. If you want to start using it, start using the Alerter and add other systems later. You also may like the cruise control, which helps you not to overspeed.

3.6.1 Alerter

The Alerter is a device that checks if you are still capable to drive the train. It may come in a form than you need to press a button at regular intervals (e.g. 30 seconds). In another form it checks if you are active using throttle and brake. If you use it, the alerter will not bother you. If you do not touch them, there will be a visible and/or audible signal and you need to acknowledge.

If you fail to acknowledge, the emergency brakes will be applied. In some cases, pressing the button will release them, other system brake the train to a shameful stop and you may try again.

Activate the alerter: **Shift+ Enter** (at the **Numpad**).

Acknowledge: **Q**

3.6.2 Cruise controls

Some trains may have a cruise control. They do not always work in the same simple way, so please check the game manual.

The most common procedure is to activate the cruise control using **Ctrl+R** (for the German ICE trains, you will need to activate it at one of the digital screens in the cab, the BR442 has a completely different way of working, the BR143 and BR112 use the throttle to set a target speed).

Then you can increase the target speed by pressing the **R** button or decrease the target speed using the **F** button.

You can see at your speedometer in the HUD the settings of the cruise control as a blue line around the speed gauge.



Figure 3 The blue line shows the target speed for the cruise control

Then apply the throttle as desired. This is the simple use. You also can activate the cruise control while driving, but this is advanced use.

In most case you can turn on the cruise control while driving, but specific undocumented procedures may apply.

If you need to brake, you can set a lower target speed, or set the throttle to off and start braking using the train brake. In some cases this will disable the cruise control. If you do not set the throttle to off, you may cause a traction lockout.

3.6.3 Safety systems

As a driver it is easy to miss a signal or overlook a speed warning. The driver safety systems should protect the train against serious accidents. In general, except for LZB, they do not really intend to be helpful yet.

These systems vary in complexity and by country. If you want to try using the, the British AWS is a good starting point. AWS does not enforce anything, except that you MUST acknowledge the alerts.

You find it at most UK routes.

The German system PZB is a more complicated and very prescriptive. The used terminology does not really help to use these functions easily.

For high speed lines in Germany you may find the LZB system. LZB combines cruise control (you still need to turn the cruise control on manually!) with in cab signalling. It will see a long distance ahead and it will drive the train by itself. This is nice for a short distance, but on the long run it is boring of course.

In the US ACSES and ATC are the more advanced systems. They are in itself a bit more friendly to the driver than PZB.

In this stream, Matt gives a tutorial on PZB and LZB.

<https://www.youtube.com/watch?v=Ry8FuUphDgU>

I recommend watching this stream anyway. It gives you valuable driving tips for Köln-Aachen.

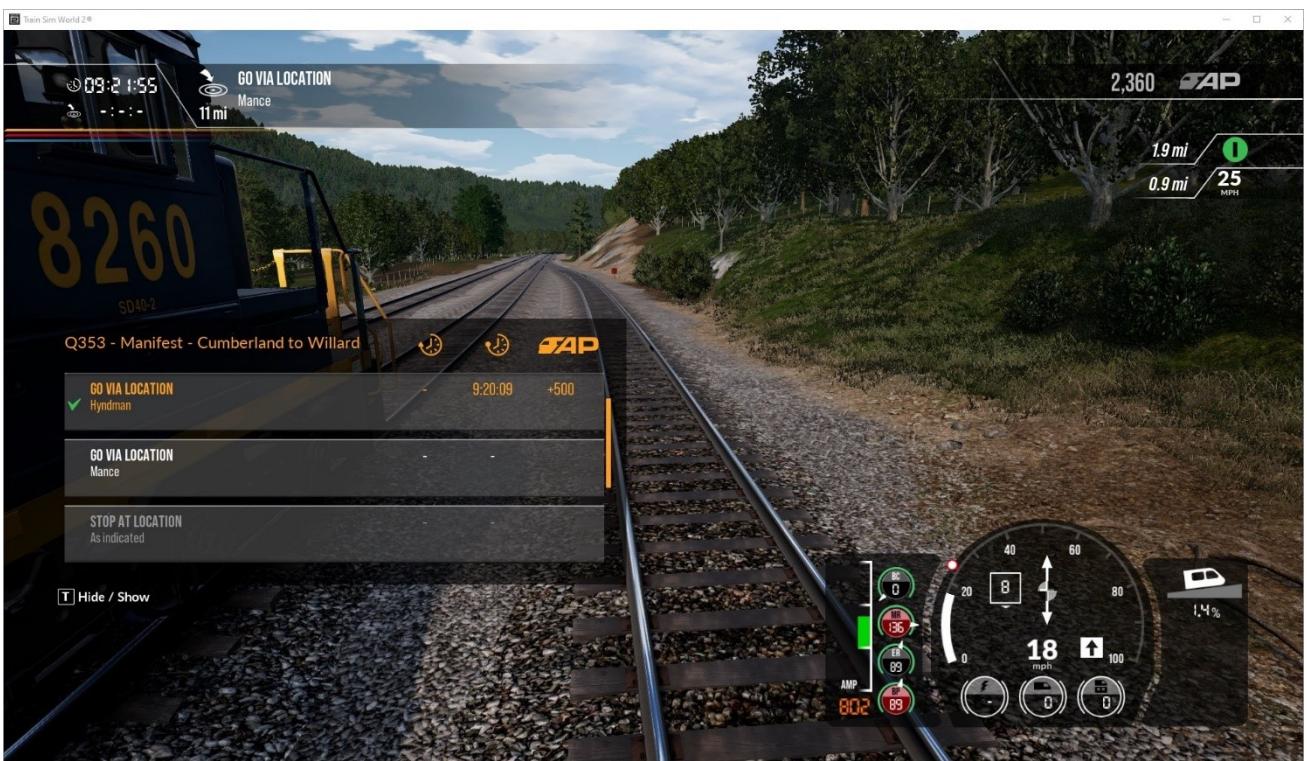


Figure 4 Objective viewer

Note: for users of a controller, the scroll function now should work.

3.7 Route learning

In real life a train driver must know the route well before she/he is allowed to drive without supervision. It may be an interesting driving style to imitate this in TSW. But keep in mind, if you drive just for fun it is hard to try do it as well as a professional driver that will do a route 4 times a day up and down and that five days a week. In the HUD Settings chapter (4) you can learn how to selectively turn on or off HUD elements.

(Used with kind permission of Olaf the Snowman)

Source: <https://forums.dovetailgames.com/threads/route-learning-methods.21807/>

1. Don't do all at once. In real life, you would get a set number of days to learn a route. For example, from Paddington to Reading you may get 20 days. You don't need to learn everything on day 1 so take your other time otherwise your head is just going to spin if you try to take in too much at once
2. Stations (and braking points). Junctions including speeds and type of crossing. E.g. will you get a flashing yellow sequence or will you get checked down for the 'approach release' signals. Type of signalling, e.g. 3 aspect signalling, 4 aspect signalling, absolute block (semaphores), etc...
3. Route risks. E.g. areas where signals are close together so you have to brake harder; SPAD risks and where all the Multi-SPAD signals are located- e.g. signal hidden around a bend; areas where TPWS is 'sensitive' so you have to get speed down against a red signal.
4. Gradients
5. Tunnels and viaducts
6. Method of dispatch at stations (assuming no guard). E.g. At Slough, you have a dispatcher with a green flag/light. At Paddington and Reading, you get 'CD' (close doors) and 'RA' (right away) indications. All other stations in between is self-dispatch.

7. Areas of low adhesion so care needs to be taken when approaching those stations particularly in Autumn
8. What platforms at stations are prohibited for certain traction, train lengths or services. E.g. you don't want to be accepting platform 14 with an HST into Paddington
9. Indications required in order to be able to stop at a station. E.g. if you need to stop at Burnham, you must be in the relief (slow) lines so you need to ensure you are routed onto the relief at Slough West junction if you're still on the fast lines at Slough (Westbound).
10. Stations that require selective door opening (SDO)
11. Writing notes may help if that works for you. In real life, you would get a highly detailed route map and you can just annotate it. Seeing as that isn't going to happen, you could just take a print off the very basic ECW map in the TSW manual and annotate it. E.g. write speeds down or braking point or "short platform," etc...
12. Ultimately, your knowledge will pick up with experience so just keep doing the same routes over and over again.

In real life, you would have access to the following:

1. Detailed route maps
2. Route Risk Assessments which are usually done by Senior Operation managers which highlight all route risks of where there can be loads.
3. Sectional Appendix which are by Network Rail.
Route learning instructors who will teach you through the route in a classroom (although not all companies have this)
4. Cab pass so you go in the cab with other drivers not just for your company. You can pick up a wealth of information from drivers that have been operating on the route for years



4 HUD settings

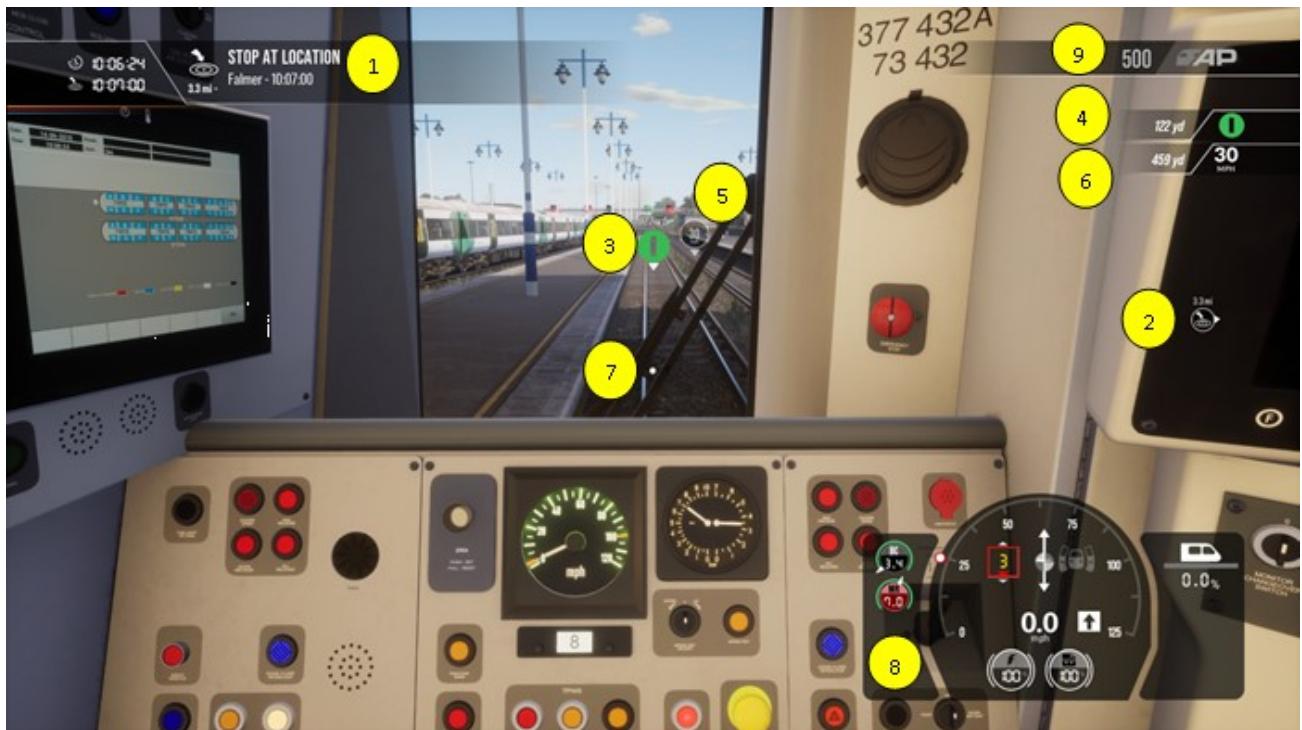


Figure 5 All separately switchable elements in the HUD

The HUD (heads up display) is an overlay on the game screen to provide you with additional information. Essentially the HUD has two display styles:

1. Markers, showing you destination, next signal and next speed limit in the landscape ahead of you

2. HUD version, text blocks showing the information on screen

In Figure 5 all elements are shown and most of them of them can be turned off individually. The numbers below refer to the numbers used in the screenshot. The names refer to the names that are used in the settings menu.

1. **Objective HUD**, which shows your next task. It also shows the distance to the next driving task, the scheduled arrival time and the actual time. You cannot turn this off individually
2. **Objective distance marker**, a floating target that shows where to go. It is possible to assign a number of tasks where you need to determine the order yourself (e.g. release all brakes). In that case you will see more than one objective marker.
3. **Next signal marker**. As shown here, it also shows the signal aspect. You can turn that off.
4. **Next Signal HUD**. The HUD element that shows the distance to the next signal. It also can show the aspect, as shown in the screenshot.
5. **Next speed limit marker**, shows the next speed limit distance and location.
6. **Next speed limit HUD**. The HUD version of the next speed limit
7. **Reticule Centre dot**. This is a focus point for the mouse. If you right click at the mouse, it will fix itself, which makes it easier to set a control. You can turn the visibility on or off.
8. **Speedometer HUD/compass**
9. **Score Marker**, show your actual score for this drive
10. **Notifications**. (Not shown) if you activate a control, at the right of the screen a text shows the present value.
11. **Button Prompts**. This shows a text with each control in the 3D world. This is useful because it tells you whether the control is functional. Many controls are not documented at all ...
12. **Stop Marker**. A colored track, starting red and ending green to give you guidance where to stop your train. (See Figure 6)
13. **Frame rate** (not shown)



Figure 6 Stop Marker

There are two ways to turn HUD elements on or off. You can use the Settings menu, which you can access at several locations, including through the Pause men (press **Esc** to enter this menu). For a number of settings there are key binding you can use to toggle the setting. This works quite well, except for cases where the effect is not immediately visible, like with the Stop Marker.

Nr	Element	Key	Setting?	Comment
1	Objective HUD		No	
2	Objective distance marker	Ctrl+1	yes	
3	Next signal marker	Ctrl+3	yes	

4	Next signal HUD	Ctrl+4	yes	
	Next signal aspect		yes	
5	Next speed limit marker	Ctrl+2	yes	
6	Next speed limit HUD	Ctrl+4	yes	
7	Reticule centre dot	Ctrl+8	no	In the settings this is called “Crosshair” and “Reticle Opacity Circle” There also is an “Auto hide” option for game controller users.
8	Speedometer HUD	Ctrl+5	no	
9	Score marker	Ctrl+6	no	
	Notifications		yes	
	Button prompts		yes	
	Stop marker	Ctrl+7	yes	
	Frame rate	Ctrl+F3	No	
	Whole HUD	F1	No	
	Schedule	T	No	Shows the schedule as an overlay

Note: Ctrl+4 cycles you through setting the Next speed limit and Next signal settings. Make sure to do this while these elements are visible, because you do not get feedback.

Note: For ctrl + [5] (HUD), ctrl + [6] (score), ctrl + [8] (reticle), you may need to change the key bindings, because on some keyboard, when you type ctrl+5 it understands ctrl + []

Tip from [dark-rabbit](#)

4.1 TSW3 additions to the HUD

In TSW3 below the Objective HUD you may see a driver assistance information. You may already know this from the LGV route in France or South Eastern HighSpeed, where it tells you to switch to another power system, but now it is used to warn you in some cases if you do something wrong, e.g. try to open the throttle while the brakes are still applied, or leave the Cylinder cocks open when they should be closed.

Similarly at the right side you can get help for using PZB, which can be a bit intimidating at first. You can turn this off in the settings.



5 Key bindings

Note: the key bindings discussed here represent the general situation, but there are exceptions and bugs in key binding. One you will notice, in some locos the high horn is bound to space and the low horn to N. In some locos this is reversed. There are other peculiarities as well.

5.1 Camera keys

The cameras work different from what you are used to in TSxxxx. The “**Boom camera**” replaces the front and rear view, the head out camera works only for the right window.

The key bindings for the camera are still a mess. You need keyboard, mouse and XBOX controller to be able to use all possibilities and there still are a number of bugs.

Description	Key	XBOX	Comment
Set cab camera	1		
Head out camera	→		From cab camera
Back to cab camera	←		From headout camera
Set instrument camera	←		From cab camera, detail view on instrument board
Back to cab camera	→		From instrument camera
Boom camera	2		This camera is intended to follow the train. By pressing the key multiple times you can switch from front to rear.
Floating camera	3		Same as Boom Camera, but you can now look in any direction
Free camera	8		Move anywhere, though it works more like the 4-key in TS2018. The zoom and altitude functions are not working properly.
Go to 2D map	9		Press again to go back to 3D
Return from 2D to Pause menu	Esc		

Move to next rail vehicle	Ctrl + →	For Boom or Floating camera
Move to previous rail vehicle	Ctrl + ←	For Boom or Floating camera
Moves to next cab	Ctrl =	I think this is not yet working properly, so be careful. Because TSW supports true multiple units it may have unanticipated consequences when you are driving. It doesn't bring you to engines at the other end of the train, only adjacent engines.
Moves to previous cab	Ctrl -	I think this is not yet working properly, so be careful. Because TSW supports true multiple units it may have unanticipated consequences when you are driving. It doesn't bring you to engines at the other end of the train, only adjacent engines.
Exit cinematic camera	Enter	I found this instruction in the input mapper file. It seems not to be functional.

Tip: if you are in cab view(key 1), you can use the left and right arrow key to cycle along a number of submodes. This is very handy, because you will pass the gauge panel, radio, switch board, fuse box etcetera. The implementation is dependent on the loco type.

5.2 Walking keys

If you are not in the driver seat, these key bindings apply.

Command	Keyboard	Mouse	Comments
Walk forward	W, ↑		
Walk backward	S, ↓		
Toggle run/walk	Numlock		Keep it pressed. Use the game options menu to set the default
Toggle head light	L		Very useful in tunnels or in a dark cab to find the cab light switch
Toggle crouch	C		
Change game mode/climb	E		E.g. climb on the train, sit in the driver seat ...
Interact			
Move side wards	A,D, ←→		
Turn			A bit primitive but you can look into other directions using the mouse
Zoom			

Tip: you can change walking or running as a default in the game settings.

5.3 Driving keys

Description	Keyboard	Comment
Change reverser	W	For setting the reverser you may either need S or W, depending on the engine you drive
Change reverser	S	For setting the reverser you may either need S or W, depending on the engine you drive
Increase throttle	A	Status is shown in the HUD, but not in braking mode for the combined power handle in the AC4400CW
Decrease throttle	D	Status is shown in the HUD, but not in braking mode for the combined power handle in the AC4400CW
Cruise control on/off	Ctrl+R	
Cruise control increase	R	
Cruise control decrease	F	
Gear increase	Ctrl+A	
Gear decrease	Ctrl+D	

Tip: for easier driving, rebind the gear to Page Down and Page Up. For German trains that also support PZB I recommend to bind the PZB acknowledge to the Numpad +

Also mentioned: Ctrl+A and Ctrl+D to set the Tap changer (Br 155 engine). I do not think this is used, you can use A and D instead.

5.4 Braking keys

Command	Keyboard	Comments
Decrease independent brake	[Independent brake may have another name depending on the engine, it is the brake you use when driving as a light engine.
Increase independent brake]	
Decrease automatic brake	;	Also named Train brake or Driver brake
Increase automatic brake	'	
Decrease dynamic brake	,	Also named electric brake
Increase dynamic brake	.	
Emergency braking	Backspace	
Release emergency brake	Shift+Backspace	
Hand brake	\	Also named parking brake
Release hand brake	Shift+\	
Set brake to lap	/	Sets the brake in lap position immediately. Very useful if you drive the call 101.

5.5 Light keys

Command	Keyboard	Comments
Switches to next headlight state	H	This function is not always used consistently. For a finer control, you better use the switches inside the cab, when available.
Switches to previous headlight state	Shift+H	This function is not always used consistently. For a finer control, you better use the switches inside the cab, when available.
Switches to next tail lights state	Ctrl+H	
Switches to previous tail light state	Shift+Ctrl+H	
Toggles cab light	L	In some cases you need to use Shift+L to decrease The key may have some side effects
Cab light decrease	Shift+L	
Toggles instrument lights	I	In some cases you need Shift+I to decrease The key may have some side effects, e.g. turn on a reading light. For the BR155, please consult the Ruhr-Sieg Nord Route Guide for all wonderful details.
Toggles both step lights and platform lights	K	Only for the engine you are currently driving. Applies to US engines only. In a realistic driving style, keep them always on.
Toggles ditch lights	J	Only for the engine you are currently driving. Applies to US engines only

Dependent on the engine you drive, it may be better to use the physical controls or the light configuration switches you may find somewhere in your cab. The key bindings for light are a bit rough and not very subtle.

5.6 Safety systems keys

Command	Keyboard	Comments
Request permission to pass signal at danger in forward direction and open close doors for passenger trains	TAB	The TAB Key DOES work as advertised in asking permission to pass signal at danger but you will be denied by the dispatcher UNLESS your route can be connected to your objective by the dispatcher.
Request permission to pass signal at danger in backward direction	Ctrl+TAB	Not documented, not yet tested.
Toggle Alerter isolated	Shift+Numpad Enter	For some UK trains this also will toggle AWS. Some UK locos have two levers at the AWS device, AWS Isolated, which in real life always must be unisolated and AWS changeover to select the cab which controls AWS. For these locomotives you cannot use the key bindings.
Toggle safety functions isolated	Ctrl+Numpad Enter	
Reset alerter/fault	Q	This key is widely used to acknowledge any alarming sound, which includes alerters, PCS, AWS and maybe more

PZB Acknowledge	Page Down
PZB Clear	End
PZB Override	Del

The key bindings may have a rather rough effect. In general I recommend to use the controls in the engine to set up safety systems properly.

5.7 Setup keys

Command	Keyboard	Comments
Engine start	Z	Used for diesel engines
Engine stop	Shift+Z	
Toggle master key	Ctrl+W	The master key may have different names
Master Key off	Ctrl+Shift+W	Seldom used, if ever
Pantograph raise/toggle	P	You may need to select a pantograph first. Not seen that function has a key binding as well
Pantograph lower	Shift+P	
Circuit breaker	Ctrl+P	
Circuit breaker off	Ctrl+Shift+P	

This section is a bit arbitrary. There may be more steps needed. Most of them are not bound to a key, which is not a big problem. You also may need to go to another cab to do some settings, or even outside the engine.

5.8 Other keys

Function	Keyboard	Comment
Sander	X	You need to hold the key in most cases
Lead axle sander	Ctrl+X	You need to hold the key, needs confirmation
Increase wiper speed	V	
Decrease wiper speed	Shift+V	
Climb stairs, climb into a train and so on.	E	
Toggle bell	B	Not all locos have a bell
Horn (high tone)	Space bar	You need to hold the key to continue sound. For some locos the key bindings for high and low horn have been mixed up.
Horn (low tone)	N	
Couple	Ctrl+C	Not checked if this actually is used. It may be used for automatic coupling Multiple Unit trains
Uncouple	Ctrl+Shift+C	
Coupler Lock Front	Ctrl+C	No idea what this actually does
Coupler Lock Back	Ctrl+Shift+C	
Open/close doors	TAB	This will bring up a menu, that allows you to open doors.
	Y	Alternatively you now can use the Y-key or U-key for this purpose.
	U	Y for the left side, U for the right side.



6 Game settings

Warning: I used an NVidia 660GTX which is underpowered, but it worked. After about 200 hours playing TSW the card was defect. It is possible that that it was overcharged, so be careful if your system does not meet the requirements!

6.1 Sound settings

All sound volumes can be set with a slider in a range of 0 to 100%. At least some people complain this is not loud enough and sounds are hardly audible (partly true, but maybe you don't want to turn up the volume of your speakers too much for a single game).

It is possible to set higher values, but then you no longer can use the in game settings menu to adjust the sound volumes. A better option is turn the volume of your speakers a bit up. My feeling is that the overall volume is set a bit low, but keep in mind that at a PC you can set sound volume at a number of places, at your speakers, headphone, in windows and in the game. The combined settings determine what you will hear or not.

Setting	Description	Comment
Master volume	Basic sound volume	
Ambient volume	Surrounding scenery sound level	
Dialog sound volume	Volume for dialogs. It is only used in tutorials	
Main Menu UI volume	No idea what this doing	
External Alert volume	Plays sounds for alerters and safety device while you are not in the cab	
SFX volume	SFX stands for sound effects	
Window Audio Focus	No idea what this is doing.	

Subtitles	Turns subtitles on or off in scenarios	Keep this on, otherwise you miss important instructions. It is only used in tutorials and scenarios
------------------	--	---

6.2 Screen settings

Setting	Description	Comment
Screen Resolution	This one sets the screen resolution	Best is to make it match the resolution Windows recommends
Window Mode	The way the game is displayed on your screen	Best choice is Windowed FullScreen
VSync	Synchronizes the graphics card with the monitor.	Keep it off if you limit the frame rate below 60fps.
Anti-alias method:	Way to reduce image artefacts	FXAA is generally recommended.
High Screenshot quality	This sets the screenshot quality to a max, which may consume a lot of disk space	
FPS limit	Sets a limit to the frames per second rate	Higher fps especially makes fast moving stuff look better. A very high fps may cause trouble

A somewhat technical discussion on VSync: http://www.tweakguides.com/Graphics_9.html

As far as I understood, if you have a very high fps (above 60) you may try to turn it on if you experience distortion, otherwise leave it off.

6.3 Game play settings

In this section a mix of settings that influence game play is presented.

Setting	Description	Comment
Run/walk	Sets how fast you walk in first person mode	Set it in the settings menu, but you can override the setting in game
Disable junction derail	If you set this to true, the game will not complain about junctions that are set wrong	This horrible UI design because it is stated as a negative instruction. Think twice before you set this!
Measurements	Sets unit system to imperial (Mph) or metric(km/h)	The value Automatic will switch depending on route you drive
Grade units	Sets the way grades are represented in the HUD either a division or a percentage	The value Automatic will switch depending on route you drive
Temperature units	Degrees Celsius or Fahrenheit	Not relevant, it is not actively used in the game The value Automatic will switch depending on route you drive
Camera Motion Sway	Turns cab sway on or off	Use this setting according to your preferences.
Camera Motion Sway level	You can now select how much cab sway you like to have. Set it a high for a bumpy ride and low for modern fast trains.	
Auto-Load Journeys	Load next Journey game play automatically when you finished a journey	Confusing for many users.
Hide UI in DTL Screenshots	Prevents you to clobber Dovetail Live screenshots with HUD functions	See also chapter 7.3

Bidstack Advertisements	Turn on or off real life advertisements in the game
--------------------------------	---

6.4 Where to change settings

There are number of way you can change these settings. Each way is different in what you can set and how easy you can adapt the changes.

- In game settings menu: you can access this at any moment during gameplay and the good news is that all settings will be active right away.
- Keyboard mappings: you can remap the keys and this will have effect right away. You only can do this from the menu in the game.
- In game, using key combinations
- Change the .ini files: you can directly edit the .ini files. The settings will be effective after a restart of the game and you must avoid typing errors of course.
- Use ToolkitForTSW: better than editing the .ini files, you can use ToolkitForTSW. ToolkitForTSW supports all settings except keyboard mapping. And allows you to make backups of the .ini files as well.

Notes: you find the .ini files in a folder below the Documents folder: \Documents\My Games\TrainSimWorld2\Saved\Config\WindowsNoEditor

For the Epic games Shop platform, you need this folder:

: \Documents\My Games\TrainSimWorld2EGS\Saved\Config\WindowsNoEditor

6.5 Advanced engine.ini settings full list

<https://forums.dovetailgames.com/threads/frequent-pauses-lasting-1-2-2-seconds.35878/#post-256015>

ToolkitForTSW supports managing these advanced settings. You can create smaller subset from the 180!!! Settings and use these sets in game, or even for a specific situation. The list is created for Unreal Engine 4.23, so use it with care for the updated version.



7 Advanced topics

7.1 DLC from previous versions.

7.1.1 What is preserved collection

Preserved Collection is a complex topic and relates to a large number of questions. For the predecessor of TSW2, DTG created a number of DLC. For TSW2, DTG essentially made copies of most of these DLC and then adapted the copy to work with TSW2. From moment this is done, you have a new TSW2 DLC, which may look like the original DLC, but is completely unrelated. If you own TSW2, you may find two copies of each of these DLC

You also can buy the TSW2 version of this DLC, but in this case you will **NOT** get a copy of the TSW2020 DLC.

DTG announced they will stop all development on TSW2020, including bug fixes. They did not say there will not be any bug fixes or development for the TSW2 versions of these DLC. At the moment some fixes are on the roadmap. These fixes will only be applied to the TSW2 versions.

7.1.2 What is TSW2 and TSW3 compatible

For TSW3 DTG follows a somewhat similar procedure. For each TSW2020 or TSW2 DLC you will get a TSW3 compatible alternative. For TSW2020 the same restrictions hold as for Preserved Collection (see below for details)

There are some differences, DTG stopped already selling TSW2, including all DLC except one they forgot. For some TSW2 DLC there will come an update and TSW2 will be updated with an important feature, named **Add-on manager**. This update is essential for PlayStation but it also may improve performance for other platforms.

7.1.3 Status overview of TSW2020 DLC

In Figure 7 an overview of all TSW2020 DLC. Most of them have the status Preserved Collection in TSW2, which means that upon launch of TSW2 some restrictions applied:

1. Except for the Class 43 you can use livery manager now to create your own liveries.

2. Adhesion physics is implemented in a minimal fashion, just to make it work. You will experience adhesion issues in bad weather though.

Since TSW2 has been released, about one year ago a lot has been done. There is a small team focused on existing routes and bring them up to date. For some routes they did a lot of work. The general rough view is that this has been done:

1. Bug fixes
2. Climb up the platform anywhere
3. Working level crossings
4. Better skies
5. Immersion controller
6. Sometimes upgraded scenery
7. In some cases a lot of additional drives, or even a new timetable (for Rapid Transit)
8. Working platform passenger information systems
9. Compatibility with the Livery Designer
10. Compatibility with RailDriver

With a few exceptions this is completed. For met West Somerset Railway is one of the highlights, with some beautiful level crossings and the unloading of the Fowler 4F as mastery reward.

7.1.4 Why would you still play TSW2020?

I can think of a number of reasons why you still may want to play TSW2020:

1. You still like to play the NEC route or the old Sandpatch route.
2. TSW2 and TSW3 have bugs that are not in TSW2020
3. You prefer the old HUD
4. You think TSW3 is not (yet) worth the money.

You can do so, and if you own NEC this may be a reason to keep TSW2020 installed.

Routes					
Name	Acronym	Country	Traction	TSW2 preserved collection?	Comment
Heavy Haul	HH	USA	diesel	No	Full featured remake for TSW2
North-East Corridor	NEC	USA	electric	No	Not available for TSW2
Long Island Railroad	LIRR	USA	electric, third rail	Yes	
Peninsula Corridor	PC	USA	diesel	Yes	
Great Western Express	GWE	UK	diesel	Yes	
Northern Trans Pennine	NTP	UK	diesel	Yes	
Tees Valley Line	TVL	UK	diesel	Yes	
East Coast Way	ECW	UK	electric, third rail	Yes	
Rapid Transit	RT	DE	electric	Yes	
Ruhr-Sieg Nord	RSN	DE	electric	Yes	
Main_Spessart Bahn	MSB	DE	electric	Yes	
Rhein-Ruhr-Osten	RRO	DE	electric	Yes	
Hauptstrecke Rhein-Ruhr	HRR	DE	electric	Yes	
Oakville Subdivision	OS	CN	diesel	Yes	
Locos					
Name	Base route	Country	Traction	TSW2 preserved collection?	Comment
GP-40-2	HH	USA	diesel	No	Not available for TSW2
BR182	RT	DE	electric	Yes	
BR155	RSN	DE	electric	Yes	
BR204	MSB	DE	diesel	Yes	
M3	LIRR	USA	electric, third rail	Yes	
Heavy freight pack	NTP	UK	diesel	Yes	
Class 33	WSR	UK	diesel	Yes	
Class 31	TVL	UK	diesel	Yes	
Class 52	WSR	UK	diesel	Yes	
Class 20	TVL	UK	diesel	Yes	
Amtrak SW1000R	NEC	USA	diesel	No	Not available for TSW2
Caltrain MP36PH-3C 'Baby Bullet'	PC	USA	diesel	Yes	
Caltrain MPC 15 DC	PC	USA	diesel	Yes	

Figure 7 Preserved collection overview

7.1.5 Uninstalling TSW2020 or TSW2 DLC

If you still want to keep TSW2020/TSW2, you may want to save disc space, by uninstalling most of the DLC. The first step is to open the game page in steam. At the right side of the screen, you see an overview of the DLC, see Figure 8. Click the manage DLC button. Now you can uncheck each DLC to remove in the Enabled column. If you need them again, later, check them again and they will be downloaded again.

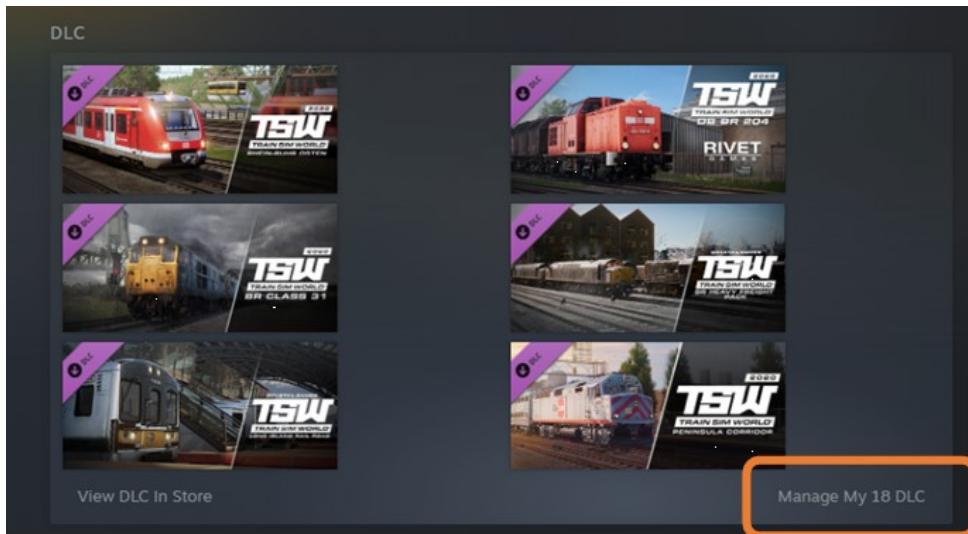


Figure 9 Steam list with DLC.

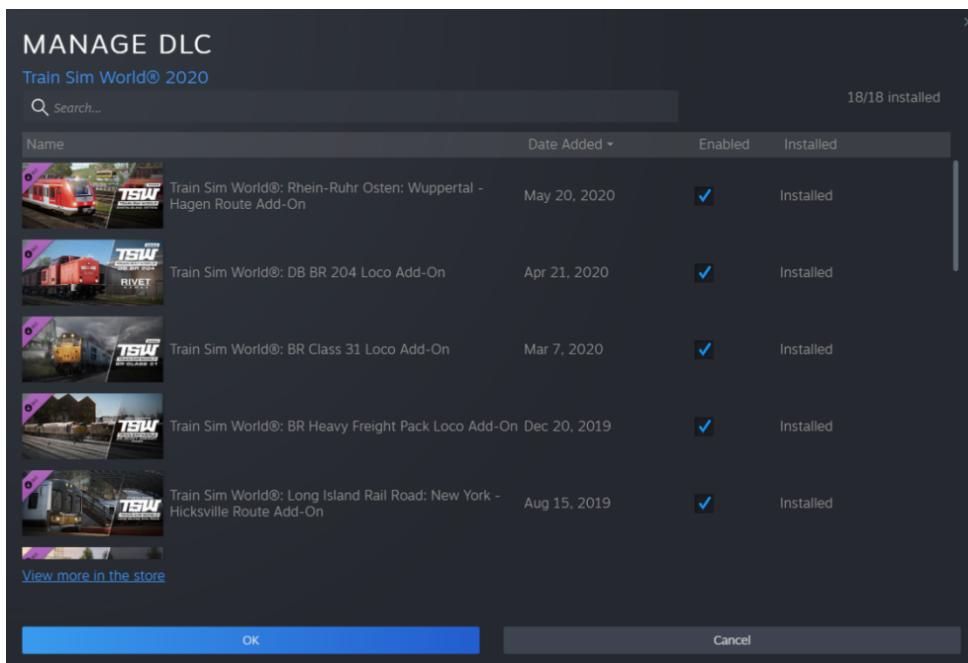


Figure 8 Manage you installed DLC at steam.

7.2 Time tables

At this site you can find most time tables in an online version, collected with admirable patience!

<https://smtimetables.herokuapp.com/>

If you prefer PDF timetables, look here:

<https://forums.dovetailgames.com/threads/wonterails-service-mode-timetables.17878/>

7.3 Combining DLC

TSW2 has a feature called layers. Essentially this means that it is possible to add locos from DLC for other routes to the route you are playing. This will add to variety of the trains you see or can choose to drive.

In some cases you will get additional timetable drives, in other cases it will just substitute locos. You can choose which one you like to drive, but for trains you do not drive the game will select a loco at random.

An example, for the route Köln-Aachen you have not any S-Bahn trains. The services for the S-Bahn are there, but you do not have anything to drive them that is included in the route. If you purchase the Rhein-Ruhr Osten route, you will experience the additional S-Bahn drives to be available.

It also works backward. If you bought the BR187 freight loco DLC, you will see you can drive it at a lot of different routes.

For console players, unfortunately there are limitations to the amount of layers that can be active. This has mainly to do with memory restrictions. DTG is still working on solutions. One thing they are looking for is to give you a choice which layers to load or to add additional timetables to give you access to all layers, but not all at the same time.

DTG did not document which combinations make sense and give you additional fun. In all its details, it is very complex. It is not really possible to put all information in one big scheme. I did an attempt to help you out and decide if you want to buy additional DLC.

Originally this worked only for German routes, but you see gradually more layers in UK and US add-ons as well.

I do not give any warranties on this list. If you see any errors, please let me know.

7.3.1 Germany

Route	Service Types	RT	RSN	MSB	RRO	HRR	SKA	MAG	MAG	HBL	NDR																			
		BR1442	BR1820B	BR185.2	BR143	BR155	BR363 red	BR185.2 Railion	BR146.2	BR204	BR422	MRCE	G6	BR425	BR442	BR101	BR442	BR406	BR187	BR403	BR423	BR403	BR423	BR112	BR182	BR442	BR143	BR146.2	BR185.2	BR363 blue
Rapid transit	EMU passenger																													
	Loco passenger																													
Ruhr-Sieg North	Freight																													
	Passenger																													
	Diesel shunting																													
Main-Spessart Bahn	Heavy freight																													
	Banked load																													
	Banked freight																													
	Light freight																													
	Double headed freight																													
	Passenger																													
	Diesel shunting																													
Rhein-Ruhr Osten	Passenger (S-bahn, RB)																													
	Freight																													
	Freight shunting																													
	(Passenger RE)																													
Hauptstrecke Rhein-Ruhr	Passenger (S-Bahn)																													
	Passenger (RE)																													
	Passenger (RB)																													
	Passenger (IC)																													
	Freight																													
Köln-Aachen	Passenger (S-Bahn)																													
	Passenger (RE)																													
	Passenger (ICE)																													
	Freight																													
Münich-Augsburg	Passenger (S-Bahn)																													
	Passenger (ICE)																													
	Passenger (RE/RB)																													
Hamburg-Lübeck	Passenger IC																													
	Passenger																													
	Freight																													
Nahverkehr Dresden	Passenger commuter																													
	Passenger IC/ICE																													
	Freight																													
	Freight shunting																													

Figure 10 German route layers

My pro tip: Main Spessart Bahn and Rhein Ruhr Osten are key routes to get. They will add a lot to other routes. The Ruhr-Sieg Nord route also will add to the fun.

breblimator

also attempts to create an overview, which I like very much. You may prefer it above my overview. Here is the link

https://docs.google.com/spreadsheets/d/1W5-ueaP4-UmdhZMKpdH0yTADmY4gNyMw_dRNi86G57o/edit#gid=0

Note: the number of routes with layers and the amount of layers is considerable now. Due to the increased number of routes and other DLC I simply cannot have them all. This makes it impossible to provide a complete overview of all layers available.

7.3.2 United Kingdom

More recently also UK routes use layers, that allow you addition drives or just more variety. I compiled an overview here. I split into two groups, the historic routes and the modern routes. For the modern routes, I summarized an number of locos originating from the Northern Trans Pennine route and the Heavy Freight DLC under the “railtour” umbrella. Each of these routes have one or more historic drives with a choice from the NTP/Heavy Freight stock. For some railtours, you also can choose the class 20 or class 31, provided by the Tees Valley Line loco DLCs.

		WSR				NTP					TVL				WCL			
		abbrev	cl47 green	cl09	cl33	cl52	cl47	cl45	cl101	cl40	cl08	cl37	cl08	cl101	cl31	cl20	cl150	cl37
West Somerset Railway	WSR																	
passenger			yellow	yellow	purple		green	green	green						green			
shunting			yellow	yellow	purple		green	green	green						green	green		
Northern Trans Pennine	NTP																	
passenger							yellow	yellow	purple									
freight							green	green	purple									
shunting										purple								
Tees Valley Line	TVL														purple	yellow	yellow	
passenger												yellow	yellow					
freight												yellow	yellow					
shunting																		
West Cornwall Local	WCL						green	green	green	green					yellow	yellow		
passenger																		
freight																		
shunting											green							

Legend		Note:
Loco comes with this Route	yellow	
Separate loco DLC for this route	purple	For NTP the cl08 and cl40 come in a single loco DLC called Heavy Freight. It adds freight to the NTP route
Loco usable for timetable	green	

Figure 11 UK Classic routes layers

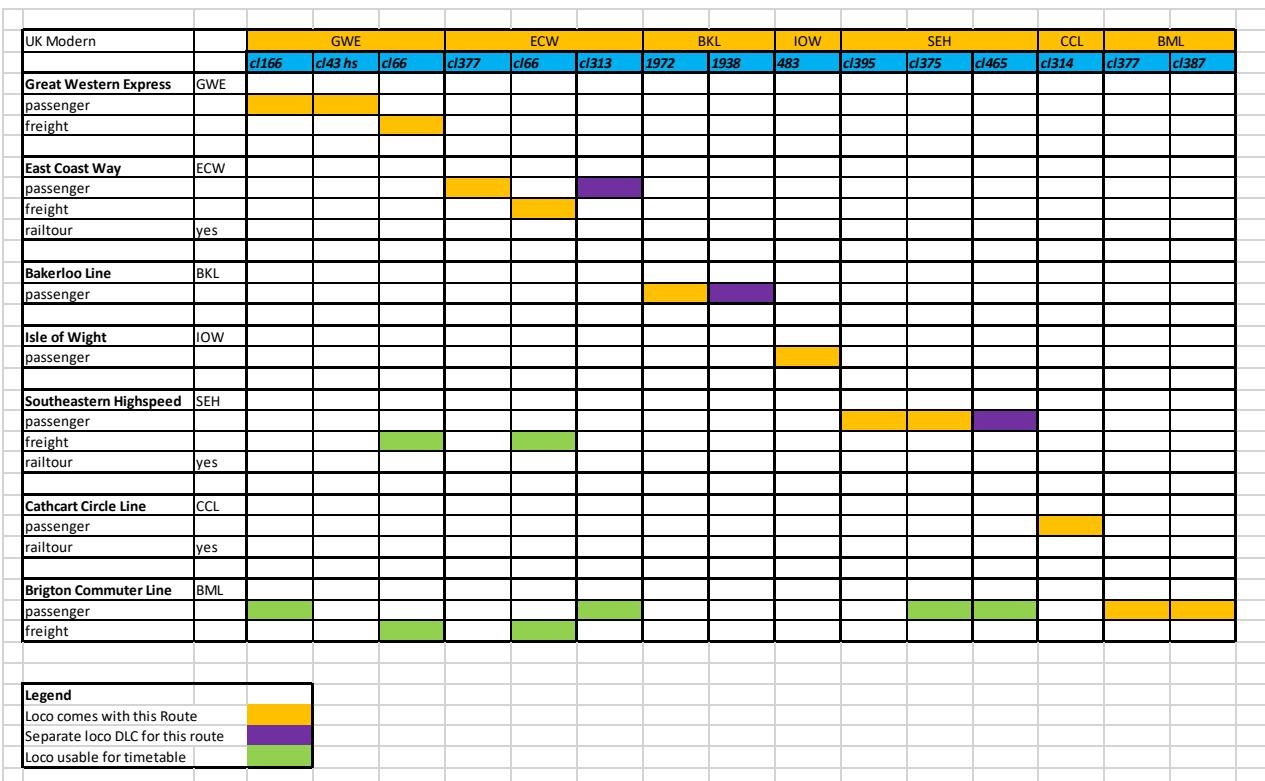


Figure 13 Layers for modern UK routes

7.3.3 United States

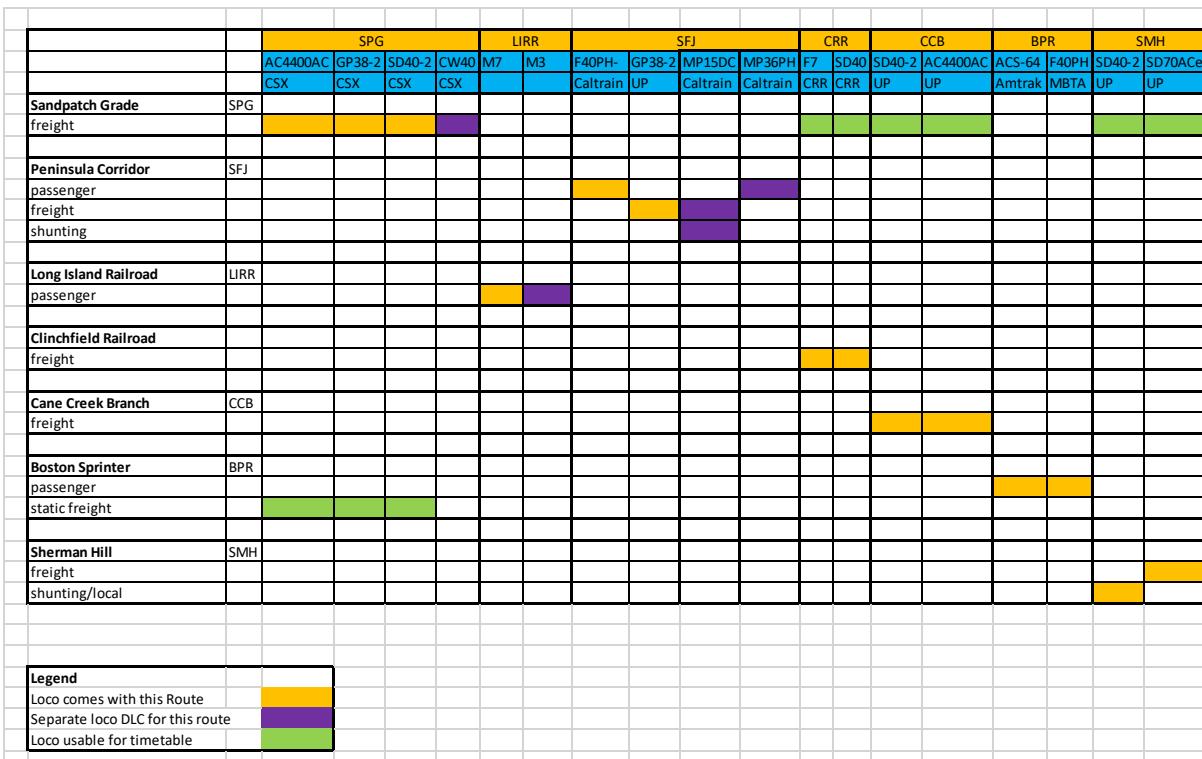


Figure 12 Layers for US routes

Also the US routes use layers, not as much as the UK and Germany but it is coming. For Boston Sprinter freight trains from Sandpatch are used to decorate the yards. You can drive them, but not outside the yards.

For the main line it is not working, because the engines from Sandpatch do not have ACSES and ATC implemented (yet).

7.4 Screenshots

You can take screenshots in three ways:

1. F12 key will make a screenshot including the HUD, which you can upload to steam. **Only for the steam platform, not for the Epic Games Shop.** If you do not want to show the HUD, press F1 to make it invisible.
2. Ctrl+F12 key will make a screenshot but it will switch off the HUD and uses a higher resolution.
3. Ctrl+F10 will create a screenshot that will be stored at your DTG profile page.

Screenshots made with Ctrl+F12 are saved in a folder under your “Documents” folder:

Documents/My Games/TrainsimWorld2/Saved/Screenshots/WindowsNoEditor/

For the Epic Games Store:

Documents/My Games/TrainsimWorld2EGS/Saved/Screenshots/WindowsNoEditor/

In order to increase the confusion, screenshots created using F12 are stored here:

steam\userdata\<userid>\760\remote\1282590\screenshots

The part **<userid>** in the path is user dependent, so you need to find out the correct value by yourself. It is a numeric value.

Note: ToolkitForTSW has a function to view screenshots from both sources. You also can rename the screenshots. ToolkitForTSW is a free toolkit for TSW2 users. You can get it here:

<https://www.hollandhiking.nl/trainsimulator>

For the Dovetail Live screenshots, there is a setting in the settings menu. By default, screenshots are created with the HUD invisible. If, for whatever reason you want to show the HUD, you can turn on this setting:

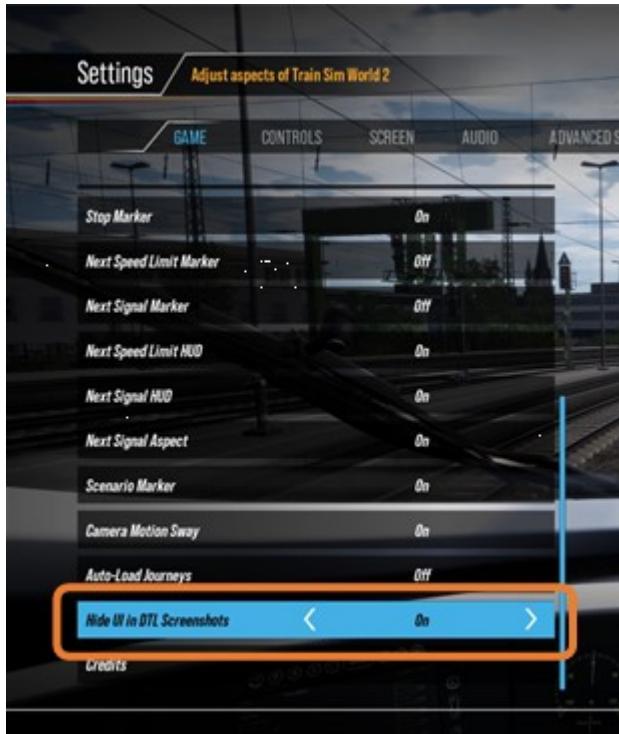


Figure 14 Setting to include/exclude HUD for Dovetail Live screenshot

According to the manual, when you are driving, you can make a Dovetail Live screenshot or videoclip using the XBOX controller, however this does not seem to work at a PC:

The PS4 controller only has a button to create a screenshot:



ToolkitForTSW

At the same download page where you find this starter's guide, you can download **ToolkitForTSW**, a toolkit for TSW2 users. The TSW2020 version is still available, but it will no longer be maintained.

In version 1.1 you can:

1. Unpack the core game and DLC
2. Make backups of screenshots, game settings, save files and so on
3. View game files
4. View key bindings
5. Manage user created scenarios
6. Editor for user created scenarios
7. View and edit game settings
8. Save multiple game settings files
9. View and save all screenshots, add tags and filter according to tags.
10. Manage mods.
11. Start TSW, with a selected game settings file, mods and optionally turn railroad radio stations on.

More features are coming. For a download location see Appendix A.

7.5 Awesome timetable drives

It may be overwhelming to see the huge amount of timetable drives. Some of these drives are a bit more interesting than others, for example because they use a slightly different path or because of other rail traffic. These drives are collected here:

<https://forums.dovetailgames.com/threads/awesome-tsw2-service-mode-runs.32010/>

To find them even more easy, an excel list has been compiled by [LeadCatcher](#). (Thanks a lot for doing that!) You can find a link towards it at the forum page.

7.6 Multiple units

The American freight heavily uses multiple units. Setting these up requires some relatively complex steps. You will find an explanation in the Route Guide for Sandpatch. This Route Guide is available from the download page hollandhiking.nl/trainsimulator



Figure 15 Enabling Banking for Sandpatch

An addition to the information above. If you have a third engine pushing the end of the train, you need to establish communications with this engine. This is called **Banking**. For Sandpatch Grade, you turn it on using the **DISP** button at the radio console.

7.7 All game save files

The number of different files storing your save files has been extended a lot recently. <profile> stands for the name of your avatar.

File name	Description
BAK_<profile>.sav	Profile Backup, just rename to PP_<profile>.sav if you need it
dovetaillive.sav	DTL Account Information
dtlentitlements.sav	Contains a list of decals and tiles you can use as mastery rewards.
firsttimeexperience.sav	Keeps track of route introductions you have played
PP_<profile>.sav	Keeps your profile data, like avatar type
statsdir.sav	It looks like this is used to hook to your online profile statistics
TSWCheckpointSaveGame_<profile>.sav	Game save for your last checkpoint save
TSWSaveGame_<profile>.sav	Game save, manual game save
TSWAutoSaveGame_<profile>.sav	Automatic game save
UGCLiveries_0.sav	Holds all custom liveries you created yourself.
USD_<guid>.sav	Holds a custom scenario

It is recommended to make backups at regular intervals. ToolkitForTSW can do this for you. You can use the Checkpoint and autosave by renaming them to a regular manual save file. Toolkit for TSW will do this for you and also will allow you to keep multiple save files.

7.8 Starting on a grade

If you need to stop at a steep grade, it may be hard to get driving again. In general, you can proceed as follows:

1. Apply the loco brake. This holds the train at the spot
2. Release the train brake and wait till it is completely released.
3. Apply a small amount of power, 10-20% but avoid wheel slip.
4. Sanding may help as well
5. Once you see the power increase, gradually release the loco brake

7.9 American and Canadian freight driving issues

When driving American and Canadian freight, be aware that the startup procedures are changed a bit with respect to TSW2020. Play the tutorials and consult the quick start manual.

7.10 Take control of a train

Every AI train has its physics simplified, in order to improve performance of the game. Therefore, you need to sit in the driver seat before setting up the engine. This tells the game engine that your train is the player train.

For passenger trains, you can take control by sitting in the driver seat as long as the train is stopped. If it starts moving, you need to wait till the next stop.

7.11 Turntable

In order to use the turntable, you need to sit down. Then you first unlock the turntable and then turn. Lock the turntable again and continue your journey.

Anyone else struggling to turn on the monitor in turntable tutorial? Neither mouse click or W-key working for just this.

Solution: First you have to right click on the mouse for interactive options! This is a general procedure if want to use the mouse to set controls.

7.12 Switching liveries

Some engines can be used in two different liveries. You can choose your livery in this way:

At the services tab, you select one of the engines. Now at the bottom of the screen you see the key Q appear.

Press Q and you see both liveries.

Tip: in one of the updates of the GWE route DTG added a class 66 in EWS livery. You can select this one in services mode.

Note 1: choosing another livery may result in a different set of available timetable drives. For instance, at MSB banking drives are only available for the Railion version of the BR185.2

Note 2: At the LIRR route, the livery system is abused to allow you to select trains of different length. Handy, but confusing. It would be more natural to introduce different views on the available timetable drives.

7.13 Snow

You may have noticed there is a temperature setting in TSW2. This is functional, the temperature indicated is the in game temperature. You cannot set the temperature. The pattern is set for the route. Therefore, at some routes you cannot have snow, e.g. Peninsula Corridor does not have snow, not even during winter.

Temperature is modelled quite detailed. It changes by month, time of day and even altitude. So if the snow melts, you know why.

7.14 XBOX controller not recognized

If you have used the mouse, TSW may think that you do no longer want to use the XBOX controller and you cannot use it for example to move in first person mode. In this case it works if you switch to the 2D map (key 9) and then go back to game using 9 again.

7.15 Climbing back at the platform

After a misstep you may end on track next to the platforms. Fortunately you can save yourself!



Figure 16. Climb back at the platform in GWE can be done at these locations.

You can either use the entries at the ends of most platforms or the steps at regular intervals along the platforms. To use the steps you need to use the E key or Y button at the XBOX controller. Not all routes have steps! For most routes, you can climb back at any location, you do not depend on steps. For older routes, this should have been implemented but in a fair amount of stations this feature is bugged, so you still may need the procedure described before. LIRR is an example

7.16 Train wash

Several routes have train wash facilities. Not all of them are animated and they do not actually clean your train. South Cornwall Local has controls so you need to turn on the train wash equipment manually. I have not seen this for other routes.

7.17 Train lights

Lights in the passenger compartments can be turned on or off in some trains, but not all. You can do this from the driver seat and for some trains from one of the coaches. Try it, or see the route guides for details.

The controls may have a fairly large variety in naming. Train Line, train lights, passenger lights, saloon lights. For the UK Class 101, you can set them for the whole train or just for the coach you are in at the moment and there may be more variety. In most cases this is not documented.

Tip: At the Bakerloo Line you may notice passenger lights go out regularly for short periods. Very annoying for the passengers but well modelled. In reality at some points the third rail is interrupted and then the passenger lights are not powered.

7.18 Realistic driving experience

If you like to add more realism, there are some tools you may like to use. This forum topic may be a good starting point:

<https://forums.dovetailgames.com/threads/the-railway-daily-duties.38101/#post-282445>

You also may have a look at this YouTube channel. It is run by a real train driver and he gives a lot of information on driving trains in the UK:

<https://www.youtube.com/@DadRail>

7.19 Add-on manager

TSW used to load all DLC when getting started. This was necessary for technical reasons. For PlayStation this resulted into a big problem. PlayStation has a limit in use of memory for DLC. So PlayStation users always had to think carefully about which DLC to keep installed.

For this issue DTG developed a solution, which was a fairly complicated project. The solution, called add-on manager, manages the DLC for you and will only load what you need. It is now implemented on PlayStation and works fine, but for other platforms there still are some issues that need to be solved. It will not make a big difference but there may be a performance advantage.

7.20 Windmills

Near Salisbury and Rockwood on Sandpatch there are some windmills. They are animated. In TSW2020 they were turning only if there actually was wind. Unfortunately, this feature is removed in TSW2, probably for performance reasons.

7.21 Donkeys

A number of routes, if not all of them contain an easter egg in the form of a donkey. It can be a real donkey, maybe hidden in a shed somewhere, but it also can be a statue or a drawing. Can you find them all? A real challenge.

7.22 Passenger information Systems

A number of routes have working passenger information systems at the platforms. They even will show delayed trains. It depends a bit on the route how advanced it is. DTG learned a lot of new tricks for this feature. Of course some routes do not have the new digital screens. Work is done even to create chalk boards and old fashioned television screens for this purpose.

7.23 Level crossings

Level crossings are working in many cases, though not always very well. It may be they stay open when the train arrives (a clear bug) or they may close very early, probably due to the way they are implemented. For newer routes you may expect car traffic passing the level crossing.

Niddertalbahn has a nice detail. If you are on foot, cars will stoop and be hooting till you move out of the way.

7.24 Mirrors

Mirrors do not work. This is a limitation of the Unreal Game Engine. For some routes, a solution is implemented that makes it looks a bit like the mirrors are working, but it is fake.

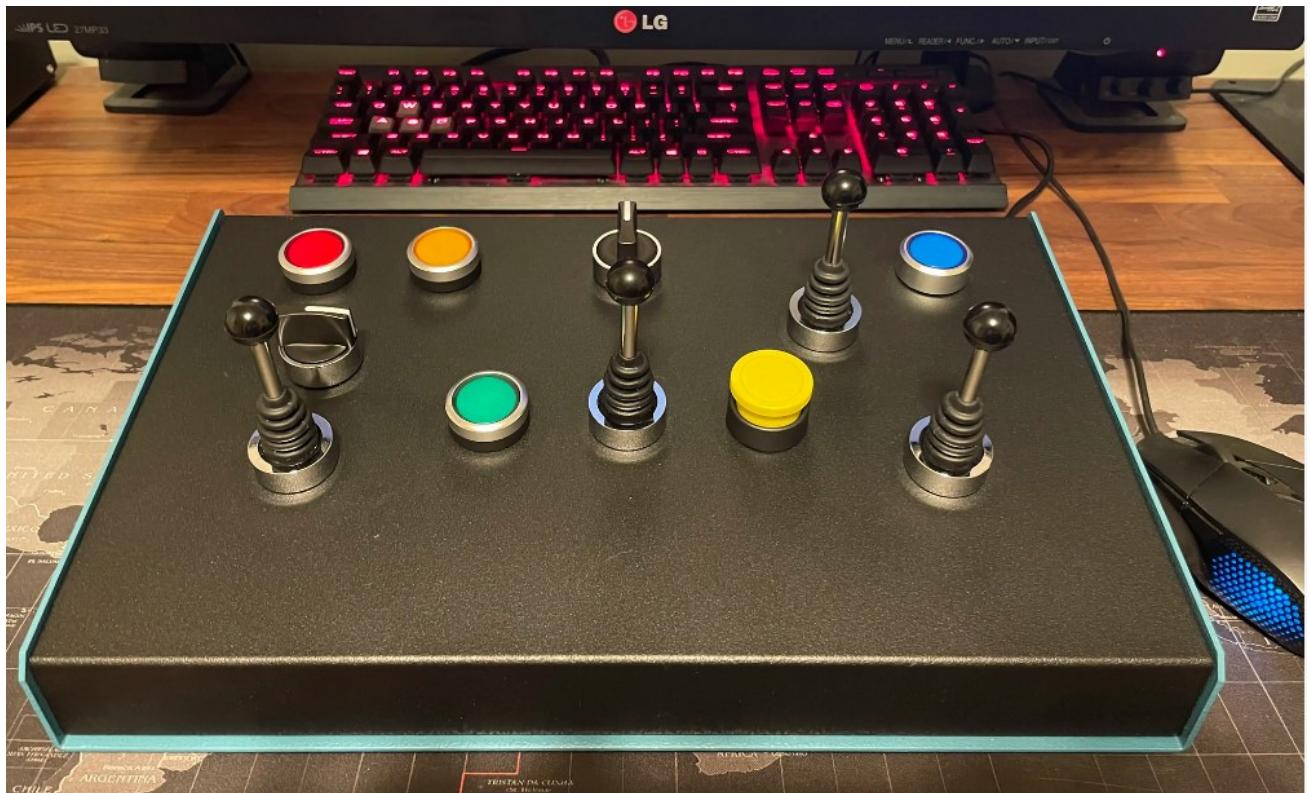
7.25 Real world advertisements in game

In a recent update, DTG added to possibility to show real world advertisements in game. Initially only at the Bakerloo Line and the Köln-Aachen route. You need to turn this function on explicitly and there is a new setting that allows you to toggle them. Look for Bidstack advertisements in the settings menu.

Unfortunately there are bugs somewhere between Bidstack and DTG, so it is not working great.

7.26 Build your own raildriver

<https://forums.dovetailgames.com/threads/arduino-controller-build.45279/#post-447330>





8 Modding

8.1 Introduction and warnings

Soon after TSW was published for the first time, people started to discover how to adapt the game in many ways. Now you can do a number of things, the game does not support:

1. You can share user created scenarios with the Scenario designer
2. You can share user created liveries
3. You can apply settings that are not supported, to make the game look nicer
4. You can use liveries that replace the official content
5. You can make the game look different by replacing e.g. scenery items or textures by other ones
6. You can remove restrictions imposed by DTG.
7. Some people can even extend the gameplay with new scenarios

In summary this is named **modding**. Modding only works if you play on a PC, for the consoles it is not possible as far as known.

In this chapter, information is collected to help you to get started with modding. Before doing so, a warning must be given:

All modding you apply has impact on the game that is not supported. I have experienced that if you do not really understand what is happening, this may have unexpected effects. It also may cause TSW to crash, freeze or other effects. So, lesson 1:

If you have mods installed and the game is not working properly afterwards, remove all mods and test again before complaining with DTG or in public.

I have seen people blaming DTG for issues they caused by using unsupported stuff.

The first part of this chapter, will focus on using mods. In the second part, you will find some information that may be useful if you want to create your own mods.

8.2 Sharing user created scenarios

With the scenario planner/designer you can create very simple scenarios. These scenarios are stored in a subfolder from your documents folder:

\Documents\My Games\TrainSimWorld2\Saved\SaveGames

For the Epic Games Store:

\Documents\My Games\TrainSimWorld2EGS\Saved\SaveGames

File names start with USD followed by a unique code (GUID) and file type .sav

Example:

USD_2F3A356E-42C4-768E-DC50-67A86347DF45.sav

If you get a user created scenario somewhere, just put it in this folder and start the game.

Sharing it, is bit more complicated. The file is a binary file, you cannot read easily. You can use ToolkitForTSW, which has a tool to find out the scenario name and route for you. You then can select the scenario, create a simple readme file and pack it into a zip file for distribution.

ToolkitForTSW is available from the same site were you found this guide.

You should be a bit careful. I do not know what happens if you import a scenario with liveries you do not own or with rolling stock you do not own. Expect unintended interaction with other mods.

8.3 Livery designer

This may be helpful for you to create liveries in real used colour schemes:

<https://de.wikipedia.org/wiki/RAL-Eisenbahnhfarben>

There is a logo pack for the livery editor. Please use it with respect for the owners of the brands. One of the major reasons the livery editor is so restricted. Do not distribute liveries created using this pack.

<https://forums.dovetailgames.com/threads/mod-download-tsw-2-livery-editor-logo-pack.32287/>

8.4 Sharing liveries

For the Livery designer, all liveries are stored in a single file. There is a tool you can use to pick out a specific livery and distribute it. You can find this tool here:

<https://github.com/RagingLightning/TSW2-Livery-Manager/releases>

The liveries are stored in the file

UGCLiveries_0.sav

You find it in the folder

\Documents\My Games\TrainSimWorld2\Saved\SaveGames

For the Epic Games Store:

\Documents\My Games\TrainSimWorld2ESG\Saved\SaveGames

You can use the same tool to import liveries.

But take care here. There is a Mod that will add a number of brand decals of railway companies to the livery editor. I do not know what will happen if you insert a new livery that depends on other mods if you did not install those mods. It may be dangerous, do you remember which mods you need over a year?

In future Toolkit for TSW may support this function as well.

8.5 Using Mods that come in .pak files

Mods that were created for TSW2020 or TSW2 will NOT work for TSW3 and may cause game crashes. Also mods created for TSW2 before the Rush Hour update will no longer work. You will get an error message if you try to use them.

Installing Mods is very easy.

- Mods come in files of the .pak file type.
- You need to place them in the **Content/DLC** folder
- There is one restriction: you can only apply one mode for a certain functionality. If you installed multiple mods only one will be active.
- The mod will replace the TSW2 functionality completely, for instance if you install a mod for a livery, you can no longer access the original livery.

ToolkitForTSW has a tool to manage installation of mods and you even can combine this with a far more customized game startup procedure.

Two good sites to find Mods for TSW3 are:

<https://www.trainsimcommunity.com/>

also good is:

<https://rail-sim.de/forum/firebase/firebase/1225-train-sim-world/>

Both sites will present .pak files, scenarios and liveries designer liveries.

Here you may find some more advanced mods, unfortunately only in Czech language.

<https://www.trainsim.cz/>

I will not discuss here all possible mods, but some are general and useful. This one will turn on a lot of capabilities to change how TSW works:

<https://www.trainsimcommunity.com/mods/c3-train-sim-world/c75-utilities/i2703-tsw-god-mode-alpha-025>

There are so many now, but you should be a bit careful in what you get installed and what not. I have tried mods that made the game crash.

8.6 Launch settings

8.6.1 Performance settings

Used with kind permission of [solicitr](#)

New

These are simple Steam launch commands which can boost framerates (some) and reduce stuttering (some). To implement them, open the Steam app, right-click on TSW2 or TSW3 as appropriate, and select "Properties." In the dialog box that opens, under General -- Launch Options you can insert console commands to be executed on game launch (don't forget the hyphens):

-HIGH

This gives the game app top priority over any background housekeeping tasks your machine may want to do while you're playing, things like indexing which often create framerate drops.

--USEALLAVAILABLECORES

-THREADS 4

These work together to make sure TSW is using all your CPU horsepower. By default, Steam only uses 3 processor cores and 3 parallel threads, no matter how many cores your machine has. Obviously that parameter should be 6 if you have a 6-core CPU etc.

-DX12

DTG's official position is that DX12 is "not supported." DX12 will give you a very appreciable framerate boost over DX11, assuming you have a GPU with any horsepower at all (DX12 moves much of the graphics load to the GPU from the CPU).

Please be aware that some users report this setting is causing problems. Like all unsupported settings you use them at your own risk.

8.6.2 Setting the number of allowed liveries

You need to create a shortcut to the game and add there this option to the command line (target file in the shortcut window):

-maxGameLiveries 255

8.7 Engine.ini settings

Both Unreal and TSW2 do have a huge number of game settings to play with. At the forums, a number of these settings are reported to do nice things. In game, there is a file named

... \Documents\My Games\TrainSimWorld2\Saved\Config\WindowsNoEditor\Engine.ini

For the Epic Games Store (you guessed it 😊)

... \Documents\My Games\TrainSimWorld2EGS\Saved\Config\WindowsNoEditor\Engine.ini

It is an ordinary text file and you can open it with Notepad or Notepad++ (I prefer the latter).

This file may look like this:

```
[Core.System]
Paths=../../Engine/Content
Paths=%GAMEDIR%Content
Paths=../../../../Engine/Plugins/Developer/AnimationSharing/Content
Paths=../../../../Engine/Plugins/Editor/CryptoKeys/Content
Paths=../../../../Engine/Plugins/Editor/CurveEditorTools/Content
Paths=../../../../Engine/Plugins/Enterprise/DatasmithContent/Content
```

```

Paths=../../../../Engine/Plugins/Experimental/AutomationUtils/Content
Paths=../../../../Engine/Plugins/Media/MediaCompositing/Content
Paths=../../../../TS2Prototype/Plugins/DLC/AC4400CW_YN3b/Content
Paths=../../../../TS2Prototype/Plugins/DLC/Bakerloo/Content
Paths=../../../../TS2Prototype/Plugins/DLC/Bakerloo_Route_Gameplay/Content
Paths=../../../../TS2Prototype/Plugins/DLC/BKR_LUL_72stock/Content
Paths=../../../../TS2Prototype/Plugins/DLC/BiLevelAutorack/Content
Paths=../../../../TS2Prototype/Plugins/DLC/CoalHopperBethogonII/Content
Paths=../../../../TS2Prototype/Plugins/DLC/CSX50ftBoxCar/Content
Paths=../../../../TS2Prototype/Plugins/DLC/CSX5201CuFtCoveredHopper/Content
Paths=../../../../TS2Prototype/Plugins/DLC/CSXDOT117TankCar/Content
Paths=../../../../TS2Prototype/Plugins/DLC/CSX_GP38-2/Content
Paths=../../../../TS2Prototype/Plugins/DLC/GundersonHuskyStack/Content
Paths=../../../../TS2Prototype/Plugins/DLC/KAH_DB_BR442/Content
Paths=../../../../TS2Prototype/Plugins/DLC/KAH_DB_ICE3M/Content
Paths=../../../../TS2Prototype/Plugins/DLC/KolnAachen/Content
Paths=../../../../TS2Prototype/Plugins/DLC/KolnAachen_Route_Gameplay/Content
Paths=../../../../TS2Prototype/Plugins/DLC/SandPatchGrade/Content
Paths=../../../../TS2Prototype/Plugins/DLC/SD40-2_YN3b/Content
Paths=../../../../TS2Prototype/Plugins/GenericDiorama/Content

[SystemSettings]
r.EyeAdaptationQuality=False
r.MaterialQualityLevel=0
r.Color.mid=0.50
r.ViewDistanceScale=5
r.MotionBlurQuality=0
foliage.LODDistanceScale=3
UnfocusedVolumeMultiplier=1.000000

```

You should not touch the first part of this file, but below the line

[SystemSettings]

You can add additional settings. Later in this chapter, you will find a number of examples.

ToolkitForTSW supports using this and has a list with all available settings, though they are not documented.

Both the TSW game and the Unreal Engine have a huge amount of settings. A lot of them you can just use, I give some examples below this introduction, but for a few you need to use the Unreal Console. This is described here:

https://train-sim-world.fandom.com/wiki/Console_Commands

You can download a full list of settings here:

<https://forums.dovetailgames.com/threads/frequent-pauses-lasting-1-2-2-seconds.35878/#post-256015>

I understand you can use the Unreal Console to get this list as well, using the DumpConsoleCommands: * instruction, but I did not try it. Unfortunately, none of the settings are explained.

You should apply them with care. If the settings will be of any help, may depend on your system and especially the graphics card. Dot not apply a huge list at once, but use them sparingly and revert the changes if they seem not to have the expected result.

Note ToolkitForTSW has this list included and provides some function to manage this huge list and use it in game. You need version 0.9 or newer of the toolkit to make this work.

There also is a list with Unreal settings, which are nicely annotated :

<http://www.kosmokleaner.de/ownsoft/UE4CVarBrowser.html>

The list, including annotations is available in ToolkitForTSW.

8.7.1 Improvement of visual quality

[pschlik.572](#) created an excellent guide on this topic. Most of what I have written in this section comes from his information and experiments.

<https://forums.dovetailgames.com/threads/a-guide-to-engine-ini-settings.4672/>

Setting	Description	Comment
Eye Adaptation	If you set this, the game will try to adapt to the behaviour of your eyes. It may cause a very leak overexposed dashboard. You can turn this off.	Use ToolkitForTSW or edit the engine.ini file
Low Material Quality	Set its value to 0 to improve rendering of grass, low fps impact	Use ToolkitForTSW or edit the engine.ini file
Screen percentage	You can set this below 100% for a better performance. I think you best don't touch it	Use ToolkitForTSW or the in game settings
View distance scale	Determines how far away objects will be rendered. A value of 5 seems to be optimal.	Use ToolkitForTSW or edit the engine.ini file
Motion blur	Motion blur is intended to give a sense of high speed, which looks horrible at low speed. It is default on, but you can turn it off in game. Unreal supports several levels of motion blur	In game: on or off only with the keyboard. In engine.ini or with ToolkitForTSW you can set it at any supported level.
Foliage distance	Makes trees and bushes look better at some distance. A value of 3 is recommended.	Use ToolkitForTSW or directly in engine.ini
Gamma correction	Allows to define where the value 0.5 in the color channels is mapped to after color grading (This is similar to a gamma correction). Value should be around 0.5, smaller values darken the mid tones, larger values brighten the mid tones, Default: 0.5	In engine.ini, using r.Color.mid.

Note: **ViewDistanceScale** can be set from the game settings, but it will have a value up to 3. I am not sure if and how this interferes with the Unreal setting. Probably the safest way of working is to keep **ViewDistance** in the GameUserSettings.ini in sync with this value. ToolkitForTSW will take care of this for you, if you use ToolkitForTSW to manage the settings.

There are many more settings, but these ones seem the most useful for starting players.

8.7.2 Advanced cab sway settings

This information comes from [londonmidland](#)

See also: <https://forums.dovetailgames.com/threads/guide-enable-realistic-head-sway-in-tsw-2.31762/>

Note You can change the amount of cab sway in the game settings. Try that first.

Disclaimer:

This setting will change cab sway across all routes. For routes which have incorrect track properties, such as GWE, this will greatly affect final results, making it look off and way too exaggerated in some cases.

Open the engine.ini file with a text editor and under [SystemSettings] add the following:

```
ts2.CameraMotionSway.EnableUprightCompensation=0  
ts2.CameraMotionSway.KSitting.Y=100.0  
ts2.CameraMotionSway.KSitting.Z=50.0  
ts2.CameraMotionSway.LSitting.Y=10  
ts2.CameraMotionSway.LSitting.Z=1  
ts2.CameraMotionSway.SittingPivotOffset=-200  
ts2.CameraMotionSway.LSitting.X=10
```

You can see [a video](#) and see for yourself. This demonstrates heads both at high and low speeds using the class 377 at ECW.

Some people used different settings depending on the route:

The Class101 at Tees Valley

```
ts2.CameraMotionSway.EnableUprightCompensation=0  
ts2.CameraMotionSway.KSitting.Y=100.0  
ts2.CameraMotionSway.KSitting.Z=50.0  
ts2.CameraMotionSway.LSitting.Y=10  
ts2.CameraMotionSway.LSitting.Z=2 – 7.5  
ts2.CameraMotionSway.SittingPivotOffset=-200  
ts2.CameraMotionSway.LSitting.X=10
```

For Sandpatch grade:

```
ts2.CameraMotionSway.EnableUprightCompensation=0  
ts2.CameraMotionSway.KSitting.Y=100.0  
ts2.CameraMotionSway.Ksitting.Z=65.0  
ts2.CameraMotionSway.Lsitting.Y=17  
ts2.CameraMotionSway.Lsitting.Z=7.5  
ts2.CameraMotionSway.SittingPivotOffset=-200  
ts2.CameraMotionSway.Lsitting.X=10
```

Setting	Range	Description
EnableUprightCompensation	0-1	Keeps your body/head angle ‘stuck’ the train so when going round corners, you will follow the train ‘tilting’
Ksitting.Y		The amount your head moves horizontally. The lower the value, the more you will ‘move’ left to right when going round corners. Sometimes even clipping out of the train.
Ksitting.Z		The speed of the ‘bounciness’
Lsitting.Y		The ‘weight’ of the train. Lower values mean it’ll ‘wiggle’ a lot.
Lsitting.Z		The amount of bounciness. Lower values result in more/more exaggerated bounces
SittingPivotOffset		Adjusts the camera which goes backwards and forwards, when braking and accelerating.
Lsitting.X		The speed of the camera going backwards and forwards.

8.7.3 Setting passenger behavior

Credits for [Winzarten](#) for his thorough investigations to do modding in the area of passengers:

<https://forums.dovetailgames.com/threads/passengers-parameters-in-engine-in.70256/>

Here a summary of his results and recommendations is given. Please read the whole article for all details.

Spawning distance:

Passengers can exist only within the player’s bubble. So even if you set these parameters to insane values, they will only spawn and exist in the world that is loaded. Once station is unloaded, all passengers are unloaded also. This looks to be around 3km, and it doesn’t look to be affected by parameters like *r.ViewDistanceScale*. **So, no matter what, you cannot get passengers to spawn beyond the 3km range.**

ts2.platform.MaxStationPassengerSpawnDistance – This is the maximum distance when “station” spawn points become active. Counterintuitively, station spawns are located on platforms. The purpose of these is to populate the station with passengers while the player is still out of visual range. The issue is that not all stations have these, even on newer routes. It is only this spawn point that can rapidly populate a station after the game was loaded. So if you load into a ‘dead’ station (like Leeds on NTP), it is most likely because it doesn’t have a station spawn point. My recommendation is to set this to a big number, like 350000, so these spawn points are always active when a station is loaded.

ts2.platform.MaxPlatformPassengerSpawnDistance – This is the maximum distance when “platform” spawn points become active. These are those “out of sight” spawn points, that represent people entering the platform from outside. Once these spawn points are active the “station” spawn become **disabled** (so people don’t magically appear on platform in players sight). Finding the right value for this is a balancing act, on one hand you want to maximize the time for “station” platform to populate the station. On the other hand, you need these spawn points for stations that only have this spawn point. So you have at least some people on platform once you stop. I’m currently running at 150000.

ts2.passengers.ForceStationSpawningOverride – Set this to 1. When set 0 passengers will only spawn on the station closest to the player. This can seriously cripple the time spawn points have to populate the stations on dense urban routes, so you often arrive to an empty station, with passengers just entering the platform area.

Spawn Rate

These parameters define how quickly will passengers' spawn. I've yet to find ideal values for these, because setting them too conservatively limits the amount of passengers you see once you arrive in station, but too aggressive settings causes the "passenger worm" of people entering the station from outside spawn point. Currently, I've those values set to aggressive, as I find it better to have lots of passengers as the initial point and finetune the values down as I continue play.

ts2.platform.MaxSpawnRequirement – The game computes how much passengers it wants to have at a platform. This is based on the passenger curve specified for the station + various other parameters that are explained later. If the number of passengers that still needs to be spawned is larger than this number, then the game will enforce minimal spawn time on spawners. I have it at 10, because if the game still wants to spawn passengers, I want for those spawn points to be chugging out passengers.

ts2.platform.MaxSpawnInterval – Maximum time, in seconds, between two passengers spawn. I imagine it is for a single spawn point. Default value is 5, I've kept it at 5.

ts2.platform.MinSpawnInterval – Minimal time, in seconds, between two passengers spawn. Even when set too low, the game will ensure that passengers are spawned correctly, and do not overlap each other. Setting it to something like 0.1, as I have, is safe.

Amount of passengers

These parameters define how many passengers are allowed to be spawned, most of these have been pretty known to the community before.

ts2.passenger.DensityScale – Density scaling, most likely of the passenger curve defined for each station, for old, pre rush-hour, routes. I've mine at 6.

ts2.passenger.DensityScaleNew – Similar density scaling, but for new, post rush-hour, routes. As these generally have more passengers, I've mine at 4.

ts2.passenger.DensityScaleForceNew – This most likely force the new density scaling for older routes. Honestly, I've this at 0, which is off. I've found there is quite a difference between the default passenger density in pre and post rush hour routes, so I prefer to be able to define scaling for each group individually.

ts2.passenger.MaxPlatformPassengers – Amount of passengers allowed to be at a single platform. This is scaled. So, if you have set this to 100, and your density scaling is at 6, you can effectively have 600 people on a single platform. I've it at 50. But I'm still experimenting. Because at one hand, setting this too low will result in fewer people on platforms. But setting this too high can result in big discrepancies in passengers numbers on platforms at the same stations. **Warning here: this may have serious performance impact if you set it to high.**

So, to sum it up, these are the values I'm currently running. Just to note, that I'm still changing them often, to figure out what works for me... and what works for me might not work for you.

```
ts2.platform.MaxSpawnInterval=5
ts2.platform.MinSpawnInterval=0.1
ts2.platform.MaxSpawnRequirement=10
ts2.passenger.SpawnLimitScaleFactor=1
ts2.platform.MaxPlatformPassengerSpawnDistance=150000
ts2.platform.MaxStationPassengerSpawnDistance=350000
ts2.passengers.ForceStationSpawningOverride=1
```

```
ts2.passenger.HotSpawningDistancePadding=0  
ts2.passenger.AdjacentStationsSearchDistance=0  
ts2.passenger.MaxPlatformPassengers=50  
ts2.passenger.DensityScale=6  
ts2.passenger.DensityScaleNew=4  
ts2.passenger.DensityScaleForceNew=0
```

Also, be aware, that no parameters can fix the bugs that currently exist with passengers, like passengers not boarding the train, or all passengers evacuating the train on the first station. But hopefully it should result, at least, in busier stations, passengers wise.

8.8 Performance tuning with settings

Many people are trying to improve performance of the game. I just give one link here to the discussions on this topic. However, when experimenting with it be careful. It may cause the game to crash.

This one may be interesting. It may increase fps and loading of tiles (Note it is written for TSW2, which makes it a bit risky to use)

<https://forums.dovetailgames.com/threads/got-stuttering-on-pc-with-gsync-or-vsync-monitor-microsoft-have-released-a-patch.36266/>

8.9 Creating mods with .pak files

I cannot provide a full modding guide here, but this information should help you a bit. The first thing you need to do is unpack the game .pak files. You can proceed as described below, or use ToolkitForTSW.

The next step is you need or get access to the livery, which resides in the files with type .uasset and .uexp. As far as I know, .uasset is an index files and it points to locations in the .uexp file. For liveries, there is a toolkit available, which is discussed below. For other purposes, you need to find out the structure of the files on your own. It is possible, but I am only aware of one guy that actually is doing that. Unfortunately he does not release his way of working.

8.9.1 Unpacking game files

First you will need an Unreal Engine Account from

<https://www.unrealengine.com/>

Download the UE4 Engine, Unreal Engine 4.26 (this version is compatible with TSW3) and install it.

Navigate to the Unreal Engine 'UnrealPak.exe' file, that should be found here

C:\Program Files\Epic Games\UE_4.26\Engine\Binaries\Win64

Open a command prompt, e.g. right click empty space in the directory and select '*command prompt here*' from the context menu.

Click on your command prompt window and either type or copy this command into it.

```
UnrealPak.exe <filepath>\WindowsNoEditor\TS2Prototype\Content\Paks\WindowsNoEditor.pak -extract
```

where <filepath> refers to the path where you installed TSW.

For DLCs you need to look into the DLC directory, where you will find one single .pak file for each DLC.

<filepath>\WindowsNoEditor\TS2Prototype\Content\DLCK

For UnrealPak, the commandline options are given below:

```
-Test test if the pak file is healthy  
-Extract extracts pak file contents (followed by a path, i.e.: -extract D:\ExtractedPak)
```

```

-Create=filename response file to create a pak file with
-Sign=filename use the key pair in filename to sign a pak file,      or: -
sign=key_hex_values_separated_with_+, i.e: -sign=0x123456789abcdef+0x1234567+0x12345abc
where the first number is the private key exponent, the second one is modulus and the third one is
the public key exponent.

-Signed use with -extract and -test to let the code know this is a signed pak
-GenerateKeys=filename generates encryption key pair for signing a pak file
-P=prime will use a predefined prime number for generating encryption key file
-Q=prime same as above, P != Q, GCD(P, Q) = 1 (which is always true if they're both prime)
-GeneratePrimeTable=filename generates a prime table for faster prime number generation (.inl
file)
-TableMax=number maximum prime number in the generated table (default is 10000)

```

Those parameters must be specified *after* the name of the pakfile, which is always the first argument. So, for example:

```
UnrealPak.exe filename.pak -extract D:\ExtractedPak
```

Note: You also can use the free ToolkitForTSW, much easier. See page 67 for how to get it.

8.9.2 Get access to the livery

You need a tool called UModel for this. (At the website the tool is renamed to UE Viewer, but the executable is not renamed, which may be a bit confusing). You can download it here:

<https://www.gildor.org/en/projects/umodel>

8.9.3 Detailed how to video

There is a more detailed YouTube video that explains the whole process and also explains how to assemble a .pak file again:

<https://www.youtube.com/watch?v=oMDKx6ft1zs>

8.10 Unofficial editor

This is advanced stuff, but there is an unofficial editor. Just in case you like it, it is worth to mention. Be careful, though and do not complain if you blow the DLC you try to change.

<https://forums.dovetailgames.com/threads/editor-download-tsw-2-tsw-3-unofficial-editor-v0-3-tutorials.45303/>

I did not try to use it, but it may take a lot of time to learn, will only work for PC and there is no guarantee it will continue to work. You also will need to know how to work with Unreal as well.

There is a long (3 hours) tutorial that may help you a bit, but before attempting this get to know the Unreal editor.

<https://www.youtube.com/watch?v=NhvpkRcM19Y>

This page gives you a lot of information on how to get started.

<https://tsweditor.github.io/docs/install/>

8.11 Messing with .sav files

The settings files, user created scenarios and liveries are saved in .sav files

You can use this tool to have a look inside them, or export them to a json file (yes this is stuff for programmers and not for ordinary people):

<https://github.com/13xforever/gvas-converter>

Unfortunately it is not working properly. Reading arrays and structs does not work and the tool is missing a number of datatypes. If you want to give it a try, be prepared to do a lot of additional work.

In the Scenario Planner Guide (<https://www.hollandhiking.nl/trainsimulator>) you can find an incomplete description of the file structures in the .sav files. You also may want to consult the source code of ToolkitForTSW to get started with reading .sav files.

<https://github.com/RudolfJan/ToolkitForTSW>

Let me know if you want to do this! I could use some help in this area. Contact me here:
trainsimulator@hollandhiking.nl

8.12 Adapting shaders:

It is possible to make colors in TSW look a bit different, maybe better to apply an additional tool called Reshade. There is a fairly complicated instruction in the DTG forums. I did not try this, but I mention it since it is there. It is confirmed that it will work with TSW2 as well, but you may have some trouble to get it working properly. There is no confirmation it works with the Unreal 4.26 update. Let me know if you use this!

<https://forums.dovetailgames.com/threads/tsw-with-reshade.21305/>

8.13 Performance tuning

Many people are trying to improve performance of the game. I just give one link here to the discussions on this topic. However, when experimenting with it be careful. It may cause the game to crash. In that case your first thought should be to undo all these settings instead of blaming DTG.

This one may be interesting. It may increase fps and loading of tiles.

<https://forums.dovetailgames.com/threads/got-stuttering-on-pc-with-gsync-or-vsync-monitor-microsoft-have-released-a-patch.36266/>

For the Unreal version 4.26 the suggestion may work less well. Be careful when experimenting with those settings.

8.14 Setting the number of allowed liveries

You need to create a shortcut to the game and add there this option to the command line (target field in the shortcut window):

```
-maxGameLiveries 255
```

8.15 Never give up control for your engine

If you are not in the driver seat, every two minutes an annoying form pops up and asks if you want to give up control for your engine. Normally, you do not want this. In engine.ini you can add this setting:

```
[SystemSettings]
ts2.dbg.RelinquishPromptWaitTime=5000
```

The time is set in seconds, so 5000 is one hour and a half. If that is not enough, you can set a higher value.

8.16 Tons of freight and other units

In TSW for the US routes the Canadian route, weight is measured in US Tons. For the European routes, Metric Tons are used. (Not sure if this holds for the UK as well).

1 Metric Ton = 2204 lbs = 1.10 US Tons.

1 US ton =907.18 kg =0.9718 Metric tons

Lorries US Canada Max weight 40 US tons

1 mile=1.609 km

1 mile= 1760 yard

1 mile= 5280 feet

1 yard= 3 feet

Here you find a conversion utility:

<https://www.convertunits.com/>

My comment to all this: it would be so much easier if the Anglian world would adopt the metric system.



Availability of this guide

This guide and ToolkitForTSW are available here:

Site name	URL
Holland Hiking	http://www.hollandhiking.nl/trainsimulator/index.php

At this location you also find useful guides and tools for Trainsimulator and TSW

At this website, you can subscribe for a newsletter. This will inform you on updates.

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