

EN

2020

TSW

TRAIN SIM WORLD®



DB BR 204 DIESEL LOCOMOTIVE

RIVET

GAMES

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1. Enter the driving cab via either of the external side doors.
2. Locate the Battery Isolation Switch on the rear facing desk.
3. Press the Battery Isolation Switch.
4. Wait until the engine oil reaches 55°C.
5. Locate the Headlights switches on the top of the rear facing desk and set the Front Headlights to on and the Rear Lights switch to red.
6. Sit in the Driver's Seat.
7. Insert the Master Key and rotate to the On position.
8. Set the Reverser to Engine Only.
9. Hold the Engine Start Switch in the on position for 5 seconds or until the engine catches.
10. Wait until the brake system charges.
11. When stopped for longer periods of time or when leaving the cab, the Handbrake is engaged. Fully release the Handbrake by holding it in release for a few revolutions.
12. Move the Reverser to the forward position.
13. Move the Straight Air Brake to the release position.
14. Insert the Brake Key and unlock the Driver's Brake
15. Move the Driver's Brake Valve to the release position.
16. Now you are ready to proceed, increase the Throttle Wheel to notch 3.
17. Once the loco passes 10 km/h (6 mph), you can select a higher notch. Move the Throttle Wheel to notch 5.
18. You can now manage your speed with the Throttle Wheel and Direct/Driver's Brake. Note, to apply brakes, the Throttle Wheel must be in notch 0.

DRIVING THE DB BR 204 DIESEL LOCOMOTIVE

Unlike many locomotives, the throttle control on the DB BR 204 is a wheel control.

The Throttle Wheel has 7 throttle modes; LL-6 (LL is 0 throttle input, and 6 is the maximum throttle input). The wheel starts in the 'LL' position. If you move the wheel clockwise, you will see the positions have numbers ranging between 1 and 6. If you leave it in one of those positions, the locomotive will begin 'notching' (the power applied to the traction motors will begin to increase sequentially in line with the set notch position) to the value you have selected, and power will be applied to the traction motors. If you wish to coast (travel without power or brake applied), simply set the wheel to LL and the locomotive will begin notching down.

The Throttle wheel will be locked in position in any of the following situations:

- The Master Key is not inserted.
- The Reverser is set to Neutral.

Important note: When applying brakes, please ensure the current notch value is at 0. If it is set above 0 when you apply brakes, the locomotive is applying power to the motors which will cause a 'traction lock' (the locomotive will no longer be able to take power). Should you experience a traction lock, simply return the notch value to 0 and release the brakes. The locomotive will then be ready to take power again.

THE DRIVING CAB

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- 1** Train Characteristics Pre-Selection Switch is used to enable the PZB safety system.
- 2** Emergency Engine Stop slam switch disengages all fuel supply and ignition systems.
- 3** Master Switch and Reverser enables/disables operation of the loco and direction control. The control also has an 'Engine Only' position required for starting the diesel engine.
- 4** Multiple Unit Switch is used when coupled to another BR 204 and enables control for both locomotives.
- 5** Throttle Wheel is used to apply power to propel the locomotive.
- 6** Own Loco Start/Stop switch is used to start the diesel engine on this loco.
- 7** Second Loco Start/Stop switch is used to start the diesel engine on a second loco (if in multiple).
- 8** Cab Light switch sets the state of the cab light.
- 9** Driver's Sunblind.
- 10** AZ 720 Unit displays the current PZB condition and the current speed of the locomotive in km/h.
- 11** Driver's Brake Valve applies or releases the brakes on every vehicle in the consist.
- 12** Direct Brake is a straight air brake that applies or releases the brakes on this vehicle only.
- 13** Brake Gauges displays the current air pressure in each of the primary brake components and includes (from left to right) Brake Cylinder, Brake Pipe and Main Reservoir gauges.
- 14** Wipers switch enables/disables the windscreen wipers.
- 15** Driver's Seat is where you will spend most of your time whilst driving this locomotive.
- 16** Sand Hold switch is used in conjunction with the Sand switch to continuously apply sand to the driving wheels to aid with adhesion.
- 17** PZB Override switch enables a temporary override of the PZB system when permitted to pass signals displaying a Stop aspect (see the section related to PZB for more detailed information).
- 18** Instrument Lights switch enables/disables the instrument lighting system.

- 19** Brake Release switch is used to release the brakes.
- 20** PZB Release is used to release from PZB Monitoring (see the section related to PZB for more detailed information).
- 21** PZB Acknowledge is used to acknowledge PZB related warnings (see the section related to PZB for more detailed information).
- 22** Sand switch is used to apply sand to the driving wheels to aid with adhesion.
- 23** Emergency Brake Valve applies the maximum brake load across the entire train.
- 24** Brake Key is required to unlock the Driver's Brake Valve. Only one key can be inserted at any one time.
- 25** SIFA Acknowledge push-button acknowledges the SIFA driver vigilance device.

Controls for the rear desk are as explained in the following pages.

7 ADDITIONAL CONTROLS



- 1** Handbrake sets the state of the handbrake.
- 2** SIFA Switch enables/disables the SIFA driver vigilance system.
- 3** Shunting Switch sets the operating mode of the mechanical gearbox (Shunting or Fast).
- 4** Front Headlights sets the state of the forward headlights.
- 5** Marker Light Front Left sets the state of the forward left marker light.
- 6** Marker Light Front Right sets the state of the forward right marker light.
- 7** Back Headlights sets the state of the rear headlights.
- 8** Marker Light Back Right sets the state of the rear right marker light.
- 9** Marker Light Back Left sets the state of the rear left marker light.
- 10** The four gauges display information relating to the battery, cooling system and gear oil temperatures. They include (from top left to bottom right) Battery Voltage, Cooling Temperature, Battery Current (in Amps) and Gear Oil Temperature.
- 11** Battery Isolation Switch enables/disables the battery.
- 12** Driver's Visor.
- 13** Manual Wiper can be manually-operated for the specific window being operated.

All other controls on the rear desk are as explained on Page 4.

The DB BR 204 is equipped with an AZ 720 display unit, as do many similarly-equipped former Deutsche Reichsbahn locos. The purpose of the unit is to display the current PZB condition and the speedometer value.

The blue lamp indicates that the PZB system is active and monitoring. The selected mode and the associated monitoring speed is displayed in the smaller "v-Überwachung" LCD.

When the PZB Mode is set to Mode Obere (Mode O), the display will indicate 85. For Mode Mittlere (Mode M), the display indicates 70, with 55 for Mode Untere (Mode U).

Whilst under Restrictive Monitoring, the display will advise on your target maximum permitted speed for the PZB Mode you have set. You must adhere to the appropriate distance/time rule and not exceed this speed or the locomotive will initiate an emergency brake application.

The unit is fitted with the appropriate indicators for 1000 Hz and 500 Hz monitoring modes, as well as a PZB Override 'Befehl 40' indicator which will illuminate once you have passed a signal displaying a Stop aspect following receiving permission to do so. Should you exceed 40 km/h whilst this indicator is lit, the locomotive will initiate an emergency brake application.

After enabling PZB or changing the mode, a Self-Test Program of the PZB operating equipment will begin. This Program determines the operating status and health of all interconnected components of the PZB system.

PZB can only be enabled/disabled when the locomotive is not in motion and the reverser is in the X position. This is also true for setting or changing the PZB Operating Mode.

Note that PZB operates exclusively in km/h units and you should ensure you set Metric units in the game settings when intending to drive with PZB enabled. PZB imperial conversions are, therefore, not provided.



Heavy trains require careful management of the locomotive's driving controls to ensure the train is well under control. It is essential that you are fully familiar with the driving controls, the sequence those controls should be operated in, the performance capability of the locomotive and its braking performance. You also need to have a good understanding of how your train will behave given certain environmental factors, such as in wet conditions and for downhill or uphill grades and know the route your train is expected to take including all appropriate maximum permitted speeds, signals, signs and appropriate hazards. Finally, knowing the total length and weight of your consist will help guide you on how much power/brake to apply.

GETTING THE TRAIN MOVING

1. Begin by releasing the Driver's Brake and wait until the Brake Cylinder reads 1 Bar (14.5 PSI) – then move the Throttle Wheel to the notch 1 position.
2. As the brakes begin to fully release, the locomotive will "take the strain". If the locomotive does not move, increase the Throttle Wheel's position slightly until the locomotive begins to creep forward.
3. Once in motion, wait for the speed to build to 20 km/h (12 mph). Once above 20 km/h, move the Throttle Wheel in one complete, steady and precise motion, to the halfway position.
4. Be aware of the locomotive's transitions through the torque converter as this can result in a change to the locomotive's handling.
5. As the locomotive's speed increases ensure the power applications are precise and singular. Don't be tempted to keep adjusting the throttle. Always set the throttle once and wait until the train stabilises with the new power setting before then increasing or reducing power. This takes a lot of practice and experience to get right but you will get a feel for the locomotive and its handling characteristics.

SLOWING/BRAKING

1. In the same way as you would for stopping a passenger train, the timing of the brake applications will need to be timed properly to ensure a smooth and stable stop. With heavy freight trains, however, you need to be particularly mindful of the consist weight behind you as the stopping distance is greatly increased by the weight of your consist and you need to decide at what distance you need to begin braking. Thinking and acting well ahead will stand you in good stead. It is always better to over-brake your train than under-brake. Always begin your brake application by applying a reduction of 1 Bar (14.5 PSI) with the Driver's Brake.

Note this 'braking point' distance is influenced by numerous factors, such as the current speed of the train, the weight of the consist, the current grade and the conditions of the rails – it will be necessary for you to adjust your braking point accordingly. This takes a great deal of practice to get right.



2. The aim is to apply sufficient brake pressure once and only adjust it once you are within sighting distance of your intended stop. As a general rule, you should always aim to be at no more than 40 km/h (24 mph) by the time you are within 457 metres (500 yards). Avoid fanning (moving the handle back and forth) the Driver's Brake handle as this can deplete your air reserves and cause snatching in the consist.
3. Move the Driver's Brake and reduce further to around 2 Bar (29 PSI).
4. As your speed reduces below 10 km/h (6 mph), move the Driver's Brake to reduce the brake pressure to 1 Bar (14.5 PSI) in preparation for the stop. This will prevent the wheels locking up and causing the train to judder.
5. Once the train has reached a full stop, move the Driver's Brake to the Full Service position to secure the train.

EMERGENCY BRAKE RECOVERY

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Follow the steps below to get your loco moving again once an emergency brake has been initiated:

1. Rotate the Throttle Wheel to notch LL.
2. Move the Reverser to the Natural position.
3. Move the Driver's Brake Valve to the Full Service position.
4. If the emergency brake was triggered by the PZB system, press the PZB Release switch or press the **[End]** key to cancel the alarm. If it was triggered by a traction fault by applying the brakes at the same time that throttle was engaged, you will need to remove the Master Key and then re-insert.
5. Once the fault has been cleared, you can now set the Reverser to Forward/Backward.
6. Set the Driver's Brake Valve to the Release position.
7. Select an appropriate notch on the Throttle Wheel to begin applying power.





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

ENABLING OR DISABLING SIFA

The default state of the SIFA system is disabled, to enable the system you must be seated in the appropriate driving seat. Locate the in-cab switch (see pages 4 to 8) and use the  button to enable/disable the system.

USING SIFA

Once SIFA has been enabled, and the train is in motion, you will hear an audible alarm every 30 seconds. Prior to the audible alert, the white SIFA indicator lamp on the desk will be lit. If you do not respond by pressing the  button, after 2.5 seconds it will sound an alarm. Once the alarm sounds, you will have a further 2.5 seconds to respond before the train will apply a full-service application of the brakes.

If you respond after the brakes have begun to apply, the brakes will begin to release but be mindful that it may take some time for them to fully release and you can begin to re-apply power.

OTHER CONTROLS

SIFA can also be managed, enabled and disabled via in-cab switches. See Pages 4 to 8 for the location of the in-cab controls relating to SIFA.

The PZB system is an advanced on-board cab signalling system used to enforce reductions of speed on approach to various situations on the track, whether that is adverse signals, changes in speed or other things that require protection. It works via three buttons on the cab desk (Acknowledge, Free and Override) and either via visual displays or lamp indicators on the desk or display panels, depending on the locomotive / unit.

ENABLING OR DISABLING PZB

The default state of the PZB system is disabled. Before you enable the system, you must first check to ensure you are in the correct mode for your train. PZB Mode O is typically used for passenger trains with Modes M and U reserved for freight services. The mode selection can only be changed from the in-cab control. Locate the switch and select the appropriate mode. Note that some trains do not have any control to change the PZB Mode, such as EMUs. These types of trains are permanently locked in the most appropriate PZB Operating Mode for that class of train.

To enable the system you must be seated in the appropriate driving seat. Locate the in-cab switch (see pages 4 to 8) and use the  button to enable/disable the system.

Note that PZB operates exclusively in km/h units and you should ensure you set Metric units in the game settings when intending to drive with PZB enabled. PZB imperial conversions are not provided.

OTHER CONTROLS

PZB can also be managed, enabled and disabled via in-cab switches. See Pages 4 to 6 for the location of the controls relating to PZB.

CALCULATING PZB MODE

The exact method employed to determine the correct PZB Mode is by mathematical calculation. Take the total Brake Weight (in tons) and divide by the total mass (in tons) of the consist, then multiply the result by 100. This will give you the brake percentage or BRH. Brake Weights can typically be found on the side of each loco and wagon.

The formula for this equation looks like:

$$\text{Brake Percentage (BRH)} = (\text{Brake Weight} \div \text{Mass}) \times 100$$

If the result is less than 65, set Mode U

If the result is between 65 and 111, set Mode M

If the result is greater than 111, set Mode O

PZB can be daunting when you first get started, but it is extremely rewarding and fun once you get the hang of it. Included in this manual is a PZB Quick Reference Chart, which will be handy to have by your side (perhaps printed, or on a mobile device while you drive) until the system begins to become second nature. Start by learning the signals and then enable PZB. It is recommended that you do not try to learn PZB and SIFA at the same time.

SETTING UP

Before you start, you should check to make sure you are in the correct PZB mode. Once you have visually verified the correct mode, enable the system.

STARTING OFF

Once PZB is enabled, and you start moving, it will switch to its Start Program, which you can see by the alternating 70/85 lights (or 70/55 for other modes) on the PZB section of the desk. Some locos also have a flashing indicator with a yellow text announcement "v-Überwachung 45 km/h". The Head-Up Display will also replicate the alternating pattern. Whilst these are alternating you should adhere to the 1000 Hz Restricted speed shown on the PZB Modes Quick Reference Chart (most real drivers will adhere to 40 km/h to allow a 5 km/h margin of error). You can either let this expire naturally OR if you are sure you have green signals ahead, no speed restrictions and/or no signals at all in the next 550 meters then you can press the PZB

Free button on the desk to release from the Start Program early.

Once released from the Start Program you can drive according to the maximum permitted speed under the given PZB mode and/or the line speed, whichever is lower.

REACTING TO THE ROUTE

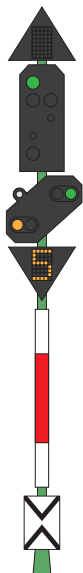
As you drive you will be faced with signals and speed restrictions, and it is important that you understand how you must react to these. As you get to (or near) these, devices next to the rails will send a pulse to the train and it's your job to predict this and react accordingly.

It is good practice not to run right up to your speed restrictions when PZB is monitoring, real drivers will generally run around 5 km/h under the PZB monitored limit to allow for any inconsistencies in speed measurement.

In our first example we are driving in PZB Mode O, and are faced with the signal shown on the left of the next page.

From a PZB perspective the most essential information here is that the distant is showing an Expect Slow aspect with an indicated 50 km/h speed at the next main signal. This signal requires PZB reaction to proceed.

After we have passed this signal, press the PZB Acknowledge button on the desk, and the on-board PZB system should now



show a yellow 1000 Hz indicator in the cab and on the HUD.

If you now refer to the PZB Modes Quick Reference Chart, you can see that we must now reduce our speed to 85 km/h within the next 23 seconds.

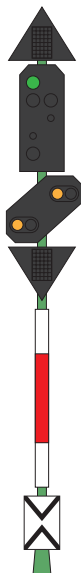
This is the only intervention PZB will have, it is now your responsibility to further reduce speed to meet the 50 km/h maximum permitted speed by the next main signal.

For the signal on the right, we are approaching a signal which has an Expect Stop distant aspect. This tells us crucially that the next main signal is a Stop aspect and we must not proceed past it.

After we have passed this signal, press the PZB Acknowledge button on the desk, and the on-board PZB system should now show a yellow 1000 Hz indicator in the cab and on the HUD.

If you now refer to the PZB Modes Quick Reference Chart, you can see that we must now reduce our speed to 85 km/h within the next 23 seconds.

Assuming the next signal remains at a Stop aspect, you must now prepare to meet the 500 Hz magnet on the track. Again, referring to the chart, this requires



that you are going no faster than 65 km/h at the exact moment you hit the 500 Hz magnet and then once you do, you have 153 meters in which to further reduce your speed to 45 km/h.

Once you go over the 500 Hz magnet you will see the red 500 Hz indicator appear on the desk and HUD – you do not need to acknowledge this, but you must obey the speed restrictions.

Once you have met the 500 Hz restrictions, your only task is to ensure that you now successfully stop before the red signal.

The examples on the previous page are not the only two times that you will need to use PZB, but they do form the most frequent situations that require PZB intervention.

Speed restrictions often also require a PZB acknowledgement, however the rules for this can be trickier to understand and remember for the new driver. The simplest rule and indeed one that is used by many real drivers on a day-to-day basis is simply to acknowledge any speed restriction showing less than 100 km/h limit. If the 1000 Hz indicator activates, make sure that you can respond with the appropriate reductions in speed according to the PZB Modes Quick Reference Chart.

RESTRICTED MONITORING

Whilst under 1000 Hz or 500 Hz monitoring, if you travel below 10 km/h for 15 seconds or more, or come to a complete stop, the PZB system will switch into Restrictive Monitoring. At this point the speed limits enforced are changed and you should use the Restrictive Monitoring speed tables from the PZB Modes Quick Reference Chart.

It is possible to release from Restricted Monitoring if neither of the 1000 Hz or 500 Hz indicators are lit and you are confident that there are no active 1000 Hz or 500 Hz magnets ahead within 550 metres, you can do this with the PZB Free button.

OVERSPEED

If in the normal course of driving you exceed the main PZB maximum permitted speed for the mode you are operating under (i.e. when not under any restrictions), the PZB system will apply a full-service application to bring you back within the limit.

This brake application will begin releasing as soon as the train is below the correct speed limit, however, as it is a full service application, it is likely the train will slow considerably before the brakes are fully released.

For example, if you are in PZB Mode O and exceed 165 km/h you will receive a warning indicator showing a "G" indicating you are exceeding the maximum permitted speed. After a few seconds, the brakes will apply and slow the train. Once the train is below 165 km/h, the brakes will begin releasing but you may be as low as 60 or 70 km/h before they have fully released.

HANDLING AN EMERGENCY BRAKE APPLICATION

Should you make an error whilst interacting with PZB, it may result in the train sounding alarms and applying emergency brakes. If this happens:

- Wait for the train to come to a complete stop.
- Press the PZB Free button to cancel the alarms.
- Apply the brake and move the throttle handle to zero.
- Release the brakes and continue as normal.

USING PZB

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Note that you will likely now be in Restricted Monitoring with an appropriate speed restriction and will need to observe that and decide whether you are able to release safely. If not, continue under the restriction until it releases naturally.

Also, be aware of the cause of the braking, for example, if you are approaching a red light or a speed reduction you should act accordingly.

PZB QUICK REFERENCE

Starting	System starts in restrictive monitoring. Limit to 45 km/h. Can Release if there are no active 1000 Hz or 500 Hz magnets in the next 550 metres.
When to Acknowledge	On passing Expect Reduced Speed, Expect Stop or any speed reduction warning below 100 km/h. Press PZB Acknowledge.
When to Release	If 1000 Hz not lit, and no 1000 Hz or 500 Hz active magnets in next 550 metres.
When to Override	On permission to proceed through a Red / Stop signal, must be below 40 km/h. Press PZB Override.
After an Emergency Stop	Stop, Press PZB Free, Reset Brakes and Throttle, then proceed as normal.

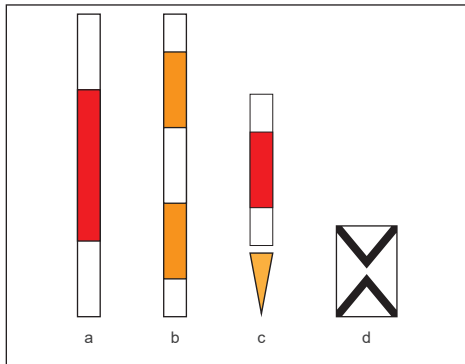


MODE O		MODE M		MODE U	
NORMAL		NORMAL		NORMAL	
Max	1000 Hz	Max	1000 Hz	Max	1000 Hz
165 km/h	85 km/h within 23 seconds	125 km/h	70 km/h within 29 seconds	105 km/h	55 km/h within 38 seconds
500 Hz Start	500 Hz Max	500 Hz Start	500 Hz Max	500 Hz Start	500 Hz Max
65 km/h	45 km/h within 153 m	50 km/h	35 km/h within 153 m	40 km/h	25 km/h within 153 m
RESTRICTED		RESTRICTED		RESTRICTED	
1000 Hz	500 Hz Start	1000 Hz	500 Hz Start	1000 Hz	500 Hz Start
45 km/h	45 km/h	45 km/h	25 km/h	45 km/h	25 km/h
500 Hz Max		500 Hz Max		500 Hz Max	
25 km/h		25 km/h		25 km/h	

SIGNAL POST PLATES

Plates placed below the signal inform the driver as to the nature of the information provided at this signal.

When reading the aspect of a signal it is important to observe the presence of these plates at the same time as they will make it clearer what information is presented and therefore how you should react to it.



From the plates shown in the image to the left, the plates are identified as follows:

- a Identifies a main signal.
- b Identifies a main block signal. The differences between this and the plate above (a) are related to what the driver can do if they are unable to communicate with the signaller and for the purposes of Train Sim World should be simply regarded as a main signal.
- c The yellow arrow is used below a main signal plate (a) to indicate that this is a combined Ks signal with distant information as well as main signal information.
- d The Ne2 plate identifies that this is a distant signal only on Hp and Ks signals.

Hp Signals are easy to interpret once you understand how they are structured. There are essentially a collection of signal heads and signs that are shown on a single post and you can learn to understand each one and then build up the picture of the entire message you're seeing piece-by-piece.

At the left of the Hp Signalling Quick Reference there is an example signal post showing four of these components in one signal.

You may find other signal posts that do not have all of these - they may only have a Hp, or Hp plus Zs3, or Hp plus Vr, etc. The principles and the way you interpret them are the same except that if there are signal components not present then the signal is not telling you anything about those elements.

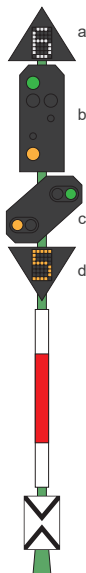
The white number at the top of the signal, known as a Zs3 indicator tells you what the speed limit is from this signal. If it reads 6, the speed limit is 60 km/h (multiply the value shown by 10) and should be adhered to from this signal.

The main signal head, known as the Hp indicator, this is the aspect you should obey immediately, so if this signal is showing red then you cannot pass it without permission from the dispatcher. The signal head shown is displaying a slow aspect, which is paired with the white "6" in relation to a speed restriction in place from this signal.

Next, is the distant signal, also known as a Vr indicator. It will

either be in this style, or in a small rectangular 'compact' style. Its job is to give you information about the next signal, so it will never show you a red - but if it shows two yellow lamps then you know for sure you have a red coming up. In the example, it's warning that the next signal also has a speed restriction and is paired with the yellow number to indicate what the speed is from that signal - in this case 50 km/h.

The yellow number known as a Zs3v, if present, indicates the speed restriction in place at the next signal. If it is not present but a yellow/green aspect is shown on the Vr indicator, then you should always assume you must not exceed 40 km/h.



The Hp signal carries a variety of signal heads, each with a specific purpose, as follows:

- a The Zs3 indicator advises that the Maximum Permitted Speed (MPS) changes from this signal. Multiply the value given by 10 ($6 \times 10 = 60 \text{ km/h}$) and be at or under this speed from this signal.
- b The Hp Main Signal head requires you to take the appropriate action as indicated from this signal.
- c The Vr Distant Signal requires you to take the appropriate action as indicated from the next main signal.
- d The Zs3v indicator advises of a change in Maximum Permitted Speed from the next main signal. Multiply the value given by 10.

DISTANT SIGNALS

Unlike a main signal, a distant signal provides information only and you are not required to take any specific action. However, typically, these types of signals provide appropriate braking distance for degraded aspects (those aspects that are worse than the current or last aspect received). You should, therefore, regard them as locations where you may need to begin braking.

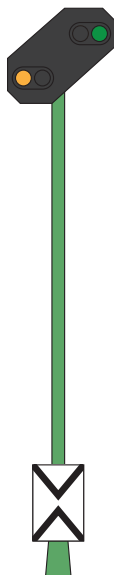
There are some additional concerns to be aware of with distant signals.

If a signal only contains the distant signal head, then there are still several different things it could be telling you – but you should be very aware of the differences as they will impact how you react to them.

If the distant signal has a white light, and the signal has no main aspect and no Ne2 board – the signal is a repeater and is advising you about the next distant signal. Repeaters are useful as they are often used when additional braking distance is required such as at the top of a downhill section.

If the distant signal has a white light and is on the same post with a main signal or there is an Ne2 board, this signal is a full distant and is warning you that the following main signal is closer than you would normally expect.

Some distant signal examples are shown on the next page.



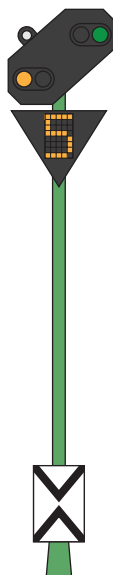
This is a standard distant signal. Note the presence of the so-called 'Ne2' board - a white board with two triangles pointing toward each other, it almost like it's a cross. This signal is telling you about the state of the next main signal.

If you have PZB enabled, you must acknowledge this signal.



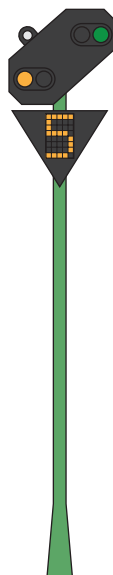
This is a variation on the example signal from the Quick Reference section. In this case, the distant works exactly the same except that the presence of the white light tells you that the next signal is closer to the distant than normal so you will need to react more promptly.

If you have PZB enabled, you must acknowledge this signal.



In this variation, we have a Vr head and Zs3v indicator, and it has a white light. The presence of the Ne2 board means this is an actual distant and the white light tells us that the following main signal is closer than it would be normally.

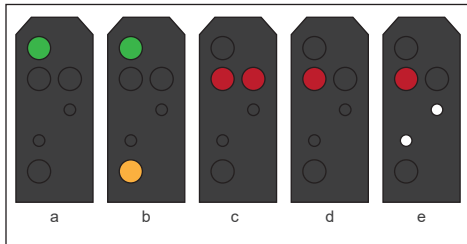
If you have PZB enabled, you must acknowledge this signal.



This variation is slightly different again, note that this time, there is no Ne2 board. This, combined with the white light, means that this is a repeater and is used to provide additional sight of the next distant signal.

If you have PZB enabled, you would not normally need to acknowledge however some repeaters do have PZB protection and you will need to acknowledge this signal if it is present.

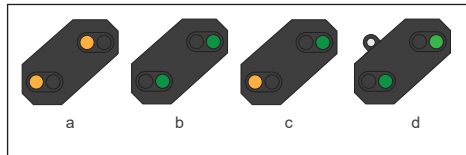
MAIN SIGNAL ASPECTS



The Hp main signal head is capable of displaying the above aspects:

- a Hp 1 **Clear**. Proceed at the maximum permitted speed.
- b Hp 2 **Reduced Speed**. Proceed at 40 km/h unless otherwise indicated.
- c Hp 0 **Stop**. Do not proceed beyond this signal, the line ahead may be occupied or obstructed.
- d Hp 0 **Stop**.
- e Hp 0 + Sh 1 **Shunting Permitted**. Proceed but do not exceed 25 km/h until an improved aspect is displayed.

DISTANT SIGNAL ASPECTS



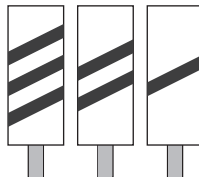
The distant signal head is capable of displaying the above aspects:

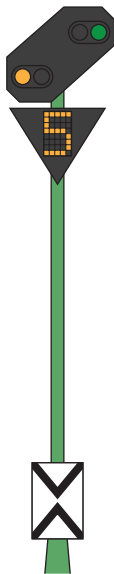
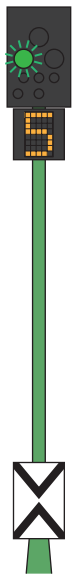
- a Vr 0 **Expect Stop**. The next main signal is displaying a Stop aspect.
- b Vr 1 **Expect Clear**. The next main signal is displaying a Clear aspect.
- c Vr 2 **Expect Reduced Speed**. The next main signal is displaying a Reduced Speed aspect.
- d The white light in the upper left indicates that the next signal is situated at a reduced distance.



APPROACH MARKERS

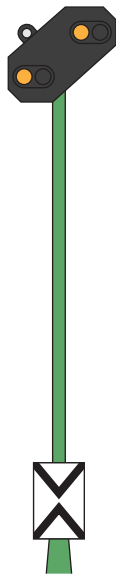
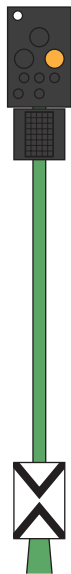
Hp signalling also uses approach markers for distant signals called Ne 3: 'Vorsignalbaken' and are placed before a distant signal. These are placed at 75 metre intervals in advance of the distant signal and essentially count down as you approach the signal.



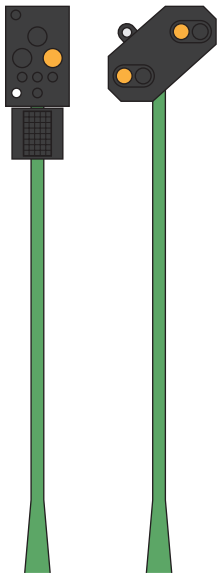


Ks Signals provide the same information as Hp signals but in a more condensed fashion. The Ks Signals aim to condense the information provided to a single head.

For example, the two signals shown on the left are providing the same information. Expect Reduced Speed at the next main signal. The presence of the Ne2 board on the Ks signal means this is strictly being used as a distant.



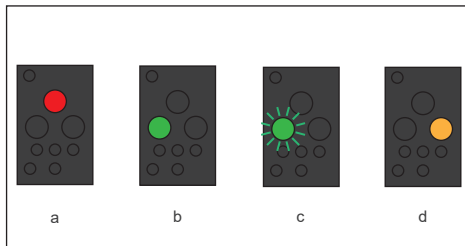
The signals shown to the left are also identical in the information provided. In this case, the white light combined with the Ne2 tells us that the main signal following this Expect Stop aspect is closer than normal, and we'll need to brake accordingly.



Compare these two examples with the ones on the previous page and note the positioning of the white light on the Ks signal on the left.

These signals are both distant repeaters (note the lack of Ne2 board), but also observe that the white light is now in the bottom left of the Ks signal. The white light in the lower left of the signal essentially advises that this signal is a repeater.

SIGNAL ASPECTS



Note: These types of signal only provide distant information if a yellow triangle post plate is present.

DEFAULT GAMEPAD WALKING CONTROLS

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DEFAULT GAMEPAD CAMERA CONTROLS

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Rivet Games is a team of passionate and talented artists and developers based in Stirling, Scotland. Building on years of prior experience of developing the highest quality routes and models for Train Simulator and Train Sim World, the team have a passion for ensuring everything they do is accurate, built to the highest possible standards, and above all, is fun and enjoyable.

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We would like to take a moment to express our gratitude to the following organisations and individuals who helped us to deliver this product:

Deutsche Bahn for their kind permission to represent their iconic brand and trains in Train Sim World.

Dovetail Games Third-Party Partner Team for their unending help and support.

Beta Testers for their tireless commitment to supporting us to make our products the absolute best they can be.



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