EN

TRAIN SIM WORLD 2

dovetail GAMES

LGV MÉDITERRANÉE

CONTENTS

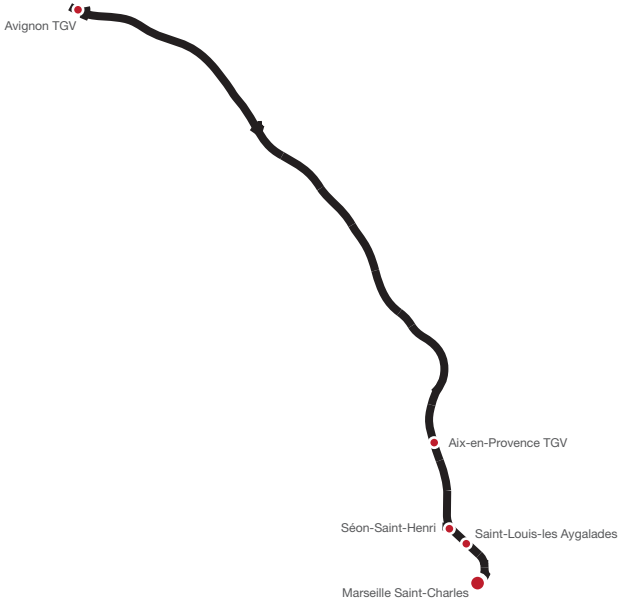
3 INTRODUCING LGV MÉDITERRANÉE

Experience the excitement of high-speed rail, aboard the iconic TGV Duplex, through sun-soaked Southern France with Train Sim World 2: LGV Méditerranée. This cutting edge route forces its way across sprawling fields and wide valleys, featuring mind-blowing tunnels, viaducts and gradients.

History meets state-of-the-art infrastructure on LGV Méditerranée, the classic Marseille-Saint-Charles station and main line contrasts greatly to the modern masterpieces that are Aix-en-Provence and Avignon TGV stations, which are linked by purpose-built high-speed rail capable of supporting 320 km/h operation.

Take on the challenge of operating the TGV Duplex, this state-of-the-art unit boasts a capacity exceeding 500 passengers, thanks to its twin deck configuration, and to ensure safety at the highest speeds is fitted with no less than 4 safety-critical systems; KVB, VACMA, Crocodile and TVM-430.

ROUTE MAP & POINTS OF INTEREST



5 GAME MODES

JOURNEYS

Blends together more than 24 hours of sequential gameplay. Start a Journey and enjoy hundreds of scenarios, timetabled services, and jobs to complete around the railway.

TRAINING

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

SCENARIOS

Scenarios are objective-based activities which provide unique experiences. Move coaches around, drive passenger and freight services and experience some of the operations that occur on the route.

TIMETABLES

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

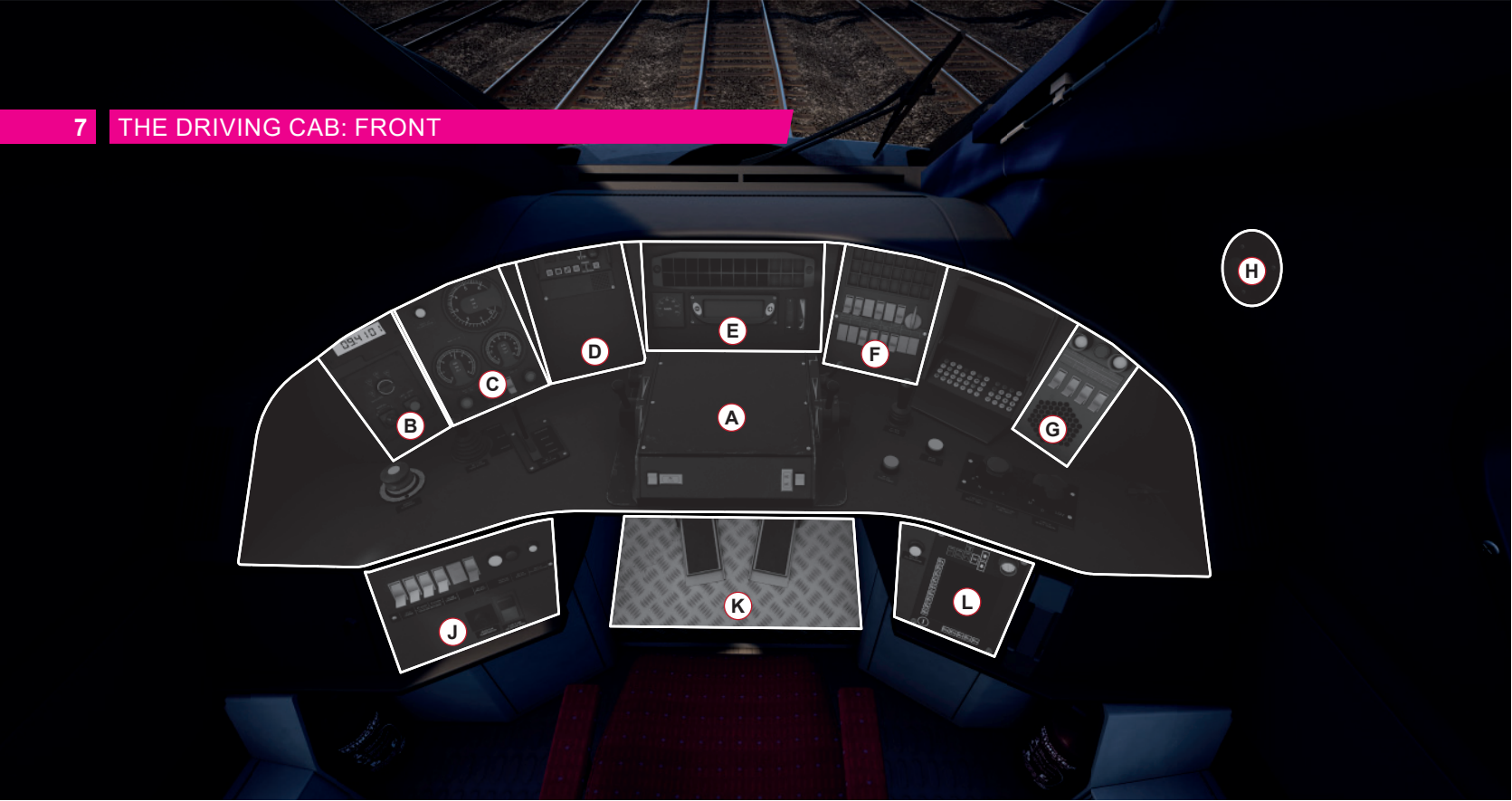
INTRODUCING THE SNCF TGV DUPLEX 200

The success of high-speed rail in France drove the need to develop the two-level TGV Duplex, which can carry up to 512 passengers, compared to 361 aboard a single-level TGV. This allows the busiest lines to serve more passengers without increasing the frequency of the schedule or the length of trains. Advances in design and construction also improved the power-to-weight ratio compared to the original TGV trains.

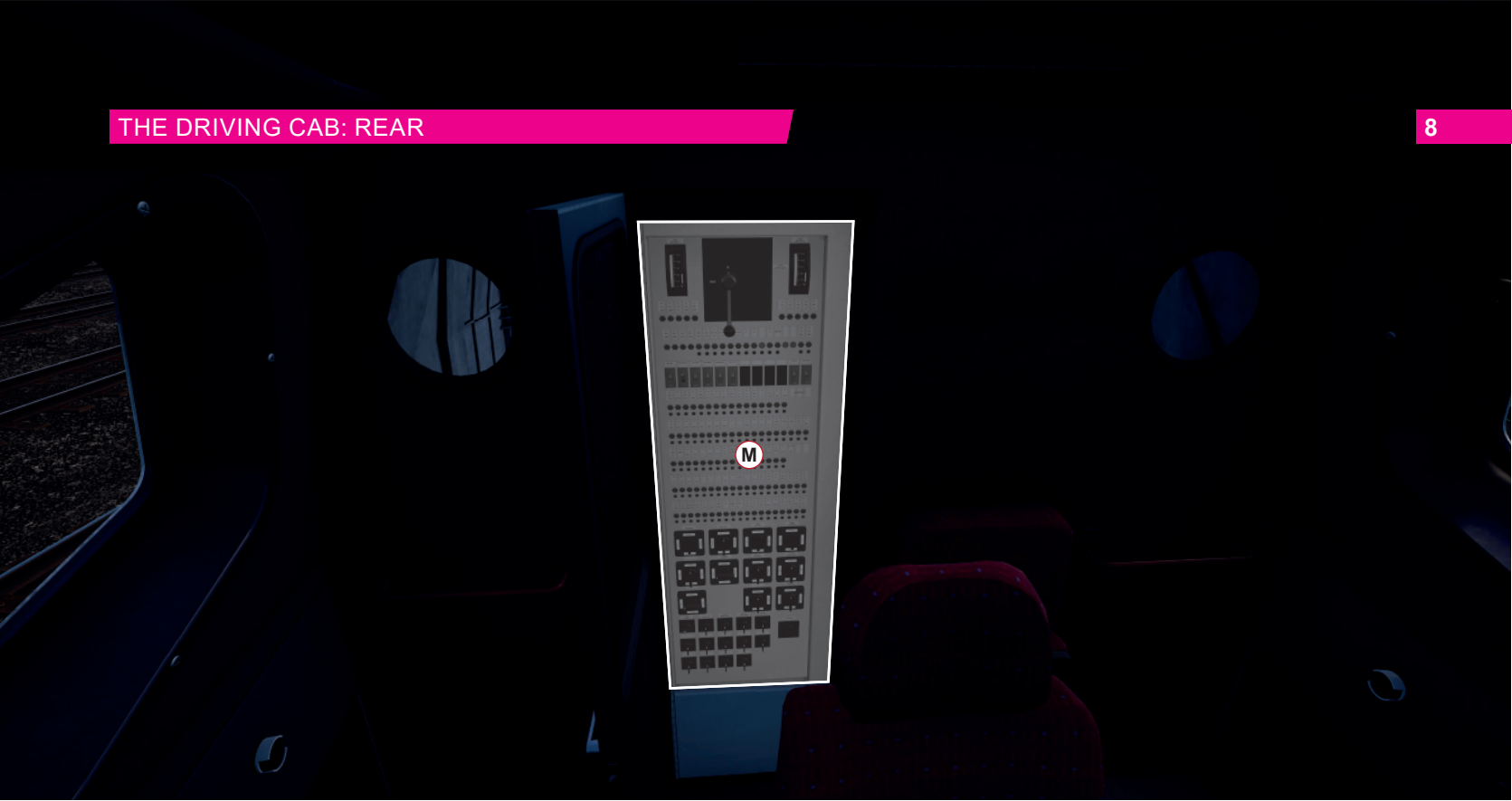
TGV Duplex consists include two power cars and eight bilevel passenger cars. Beginning in 1995, SNCF purchased 89 Alstom-built trainsets. They operate throughout the LGV network throughout France, sometimes working with two sets coupled together on the busiest lines.

The four traction motors in each power car produced up to 8.800 kilowatts of power under 25,000-volt AC LGV overhead lines. The top speed of the 380-ton train is 320 km/h in normal operation, but a modified set of these trains set a speed record of 574 km/h in 2007.

THE DRIVING CAB: FRONT

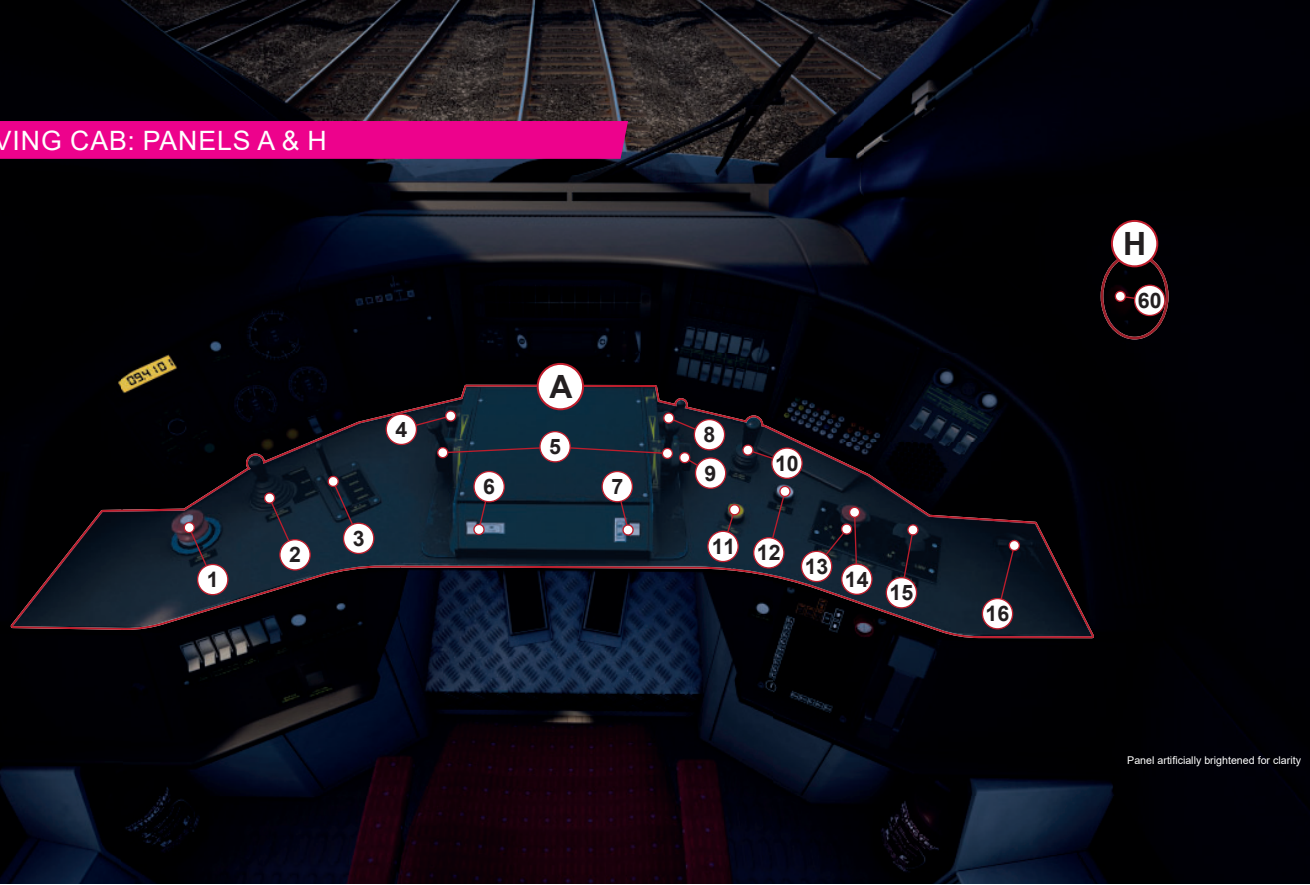


THE DRIVING CAB: REAR



A	Main Desk. See Page 16.	G	Door Control Panel. See Page 18.
B	Wiper Control Panel. See Page 17.	H	Service Reset Slam Switch. See Page 19.
C	Brake Control Panel. See Page 17.	J	Lighting & Climate Control Panel. See Page 19.
D	KVB System Panel. See Page 17.	K	Vigilance Device Foot Pedals. See Page 19.
E	TVM-430 & Tachometer Panel. See Page 18.	L	UNKNOWN. See Page 19.
F	Train Status & Circuit Control Panel. See Page 18.	M	MCB Panel. See Page 19.

THE DRIVING CAB: PANELS A & H



Panel artificially brightened for clarity

THE DRIVING CAB: PANELS B, C & D


E
30
km/h
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36

13 THE DRIVING CAB: PANELS F & G

THE DRIVING CAB: PANELS J, K & L

15 THE DRIVING CAB: PANEL M

16 THE DRIVING CAB: PANEL A

1	Emergency Brake applies/releases the emergency braking system.
2	Backup Brake Lever (non-functional) applies/releases the brakes throughout the train.
3	Train Brake Lever applies/releases the brakes throughout the train.
4	Speed Selector sets the target speed for the cruise control system.
5	Power Handle increases/decreases the amount of power applied to the train.
6	Desk Light activates/deactivates the desk lighting.
7	Headlight Brightness switch changes the operating mode of the headlights.
8	Reverser sets the direction of travel.
9	Driving Mode sets the operating mode of the train either as un/coupling, manual or speed set (cruise).
10	Horn Lever sounds the horn.
11	Acknowledge button is used to cancel any VACMA/ KVB/Crocodile alerts.
12	Alert button sets the headlights into a hazard state (flashing).
13	Pantograph Control is used to raise/lower the pantograph. The positions are: O lowers the pantograph N raises the pantograph at the rear of the train. S raises the pantograph at the rear of the train and is used when being rescued or towed. L raises the pantograph at the front of the train.
14	Pantograph Emergency button rapidly lowers the pantograph.
15	Pantograph Mode sets the operating mode of the electrical system and also defines which Pantograph is selected and its height. The positions are: M uses the AC pantograph on the rear unit. C uses the DC pantograph at both front and rear. LGV uses the AC pantograph on the rear and sets the pantograph height to its maximum extension.
16	Coupler Control couples/uncouples this train to/from another train at this end.

17 Clock displays the current scenario/service time in 24-hour format.

18 Wiper Interval sets the sweep interval to the number of sweeps per minute denoted by the value set.

19 Manual Wiper control sweeps the wiper through its complete arc when set at 1. Returning the switch to 0 returns the wiper to its parked position.

20 Windscreen Washer (non-functional) sprays the windscreen with a special fluid to clean the glass.

21 Gauge Light Dimmer controls the backlighting of the instrument gauges. See 42 (Panel F).

22 Brake Pipe gauge displays the current pressure in the brake pipe (white) and the target pressure (yellow).

23 Brake Cylinder gauge displays the current pressure of the brake cylinder or force being applied to the wheels.

24 Main Reservoir displays the current air pressure available in the brake system.

25 Brake Overcharge button overcharges the pressure in the brake pipe.

26 Brake Hold button holds the current pressure in the brake cylinder.

27 Brake Neutral button neutralises the train brake control.

28 Brake Neutral Indicator is lit when the train brake control has been neutralised.

29 KVB System Control Panel is covered in greater detail later in this guide. See Page 28 for more details.

THE DRIVING CAB: PANELS E, F & G

30 TVM-430 Panel. TVM-430 is covered in greater detail later in this guide. See Page 31 for more details.

31 Cruise Control Speed Gauge displays the current target speed selected in km/h.

32 Tachometer displays the current speed in km/h.

33 Tachometer Display Brightness adjusts how bright the digits are.

34 Power Supply Meter shows if sufficient power is available for traction.

35 Force Meter displays how much force is applied to the train.

36 Advisory Indicator Panel displays various status indications.

37 Master Switch enables all electrical systems and activates the control desk.

38 Circuit Breaker opens/closes the main circuit breaker.

39 Re-Arm Circuit Breaker enables/disables the re-arming system.

40 Windscreen Heat (non-functional) warms the windscreen when in icy conditions.

41 Sevice Retention.

42 Gauge Lights activates/deactives the instrument lighting system. See 21 (Panel C).

43 Tail Lights sets the state of the forward tail lights to on or off.

44 VACMA Cancel. VACMA is covered in greater detail later in this guide. See Page 27 for more details.

45 VACMA Test. VACMA is covered in greater detail later in this guide. See Page 27 for more details.

46 Open Passenger Doors Left sets the state of the passenger access doors throughout the train.

47 Close Passenger Doors sets the state of the passenger access doors throughout the train.

48 Open Passenger Doors Right sets the state of the passenger access doors throughout the train.

49 These switches are non-functional but relate to the in-cab signalling system.

50 Cab Light sets the state of the driver's cab lighting.

51 Corridor Light Left sets the state of the left side engineering compartment lights.

52 Corridor Light Right sets the state of the right side engineering compartment lights.

53 Climate Control sets the state of the climate control system. See 57 (Panel J).

54 Sanding enables the automatic sanding equipment.

55 Cancel Sanding disables the automatic sanding equipment.

56 Left Panel Lights adjusts the brightness level of the lower left panel lighting.

57 Climate Control adjusts the level of climate control. See 53 (Panel J).

58 Vigilance Pedal resets the vigilance alarm if depressed within 5 seconds.

59 Right Panel Lights adjusts the brightness level of the lower right panel lighting.

60 Service Retention Cancel slam switch cancels the service retainer.

61 Auxilliary Power On sets the state of the auxilliary power systems.

62 Auxilliary Power Off sets the state of the auxilliary power systems.

63 TVM-430 Isolation Switch. TVM-430 is covered in greater detail later in this guide. See Page 31 for more details.

64 Crocodile Isolation Switch sets the state of the Crocodile safety system.

65 Battery 1 Isolation Switch sets the state of the battery power system.

66 Battery 2 Isolation Switch sets the state of the battery power system.

67 KVB Isolation Switch. KVB is covered in greater detail later in this guide. See Page 28 for more details.

68 VACMA Isolation Switch. VACMA is covered in greater detail later in this guide. See Page 27 for more details.

69 Compressor Isolation Switch sets the state of the air compressor used to charge on-train air systems.

Starting a TGV from a cold and dark state (fully switched off) is a long and complicated process, and you should follow the steps below carefully to get your train up and running and ready to go:

Note: We've highlighted switches/controls to interact with using a simple reference code. The leading letter refers to the panel, as shown on pages 7 & 8, and the number refers to the switch/ control on that panel, as shown on pages 9 to 19. For example A5 means refer to Panel A, and it's the control labelled 5 in our image.

We begin with setting up the electrical systems:

1. Enter the forward driving cab (where you'll be driving from) and sit in the driver's seat to take control of the train.
2. Locate and press the Service Retention Cancel button (H60) to take control of this cab.
3. Stand up and open the panel door located behind the driver's seat on the back wall of the cab (Panel M).
4. Check or set both battery switches (M65 & M66) as well as the Compressor switch (M69).
5. Press and hold, for 5 seconds, the Auxilliary Power On switch (M61).
6. Close the panel door and return to the driver's seat.
7. Set the Master Switch (F37) to Active. The headlights and tail lights are automatically activated with the correct configuration.
8. Set the Pantograph Mode (A15) switch to the appropriate mode for your current track (See Page XX for details on which pantograph mode to use).
9. Set the Pantograph Control (A13) switch to Normal.
10. Set the Circuit Breaker (F38) to On.
11. Press the Rearm Circuit Breaker (F39) to On to energise the train's electrical systems.

Next, we move on to the Brake Test procedure:

12. Press the Hold button (C26) to keep the brakes on the power car engaged during the test.
13. Press the Emergency Brake (A1) and the Brake Pipe gauge (C22) will drop to zero bar.
14. Set the Brake Neutral switch (C27) to Pressed and the Brake Neutral Indicator (C28) will light to confirm the Train Brake Lever (A3) is inoperative.
15. Release the Emergency Brake (A1).
16. Set the Brake Neutral switch (C27) to off and confirm Train Brake control is active as the Brake Neutral Indicator (C28) should extinguish.
17. Push the Train Brake Lever (A3) forward into Release until the Brake Pipe gauge (C22) reads 5 bar.
18. Pull the Train Brake Lever (A3) backward into Apply until the Brake Pipe gauge (C22) reads 4 bar.

Moving away:

19. Set the Reverser (A4) to forward.
20. Select Manual using the Driving Mode control (A8). The Driving Mode control has several operating modes which we'll go over in greater detail later in this guide.

21. As the TGV cannot be operated over an LGV without directed speed control, as you will not be able to read speed limit signs at the speeds you will be driving. You will therefore need to activate the TVM430 system. The TVM430 system will provide you with information on the current speed limit and guide you to reduce speed for upcoming obstructions or stopping locations as you drive. To enable the system, stand up and open the panel door (Panel M) behind you as you did earlier. Set the TVM430 Isolation switch (M63) to Normal.

Note: If you wish to also enable the other in-cab signalling and safety devices, you can do so now by setting the following isolation switches to Normal: Crocodile (M64), KVB (M67) and VACMA (M68). ***Caution: Enabling additional in-cab signalling and safety devices at this point may require additional steps that are not covered until later in this guide. Only enable them if you are already familiar with their operation.***

22. Close the panel door and return to the driver's seat.
23. Press the Brake Hold button (C26) to release the brakes on the power car.
24. Push the Train Brake Lever (A3) forward into Release until the Brake Pipe gauge (C22) reads 5 bar.
25. Push the Power Handle (A5) forward slightly and the train should begin to move.
26. As you drive, the TVM430 system will activate automatically and show a series of numbers which is your current speed limit in Panel E. Refer to the section on TVM430 later in this guide for more information on how to react to changes in speed.

Continue reading for more detailed information on the critical train systems to fully master control of the iconic SNCF TGV Duplex.

22 ON-BOARD SYSTEMS: BRAKES

The SNCF TGV Duplex 200 Series has three separate brake systems. Each system is designed to enable complete control of the train allowing the driver to brake the train from speeds in excess of 300 km/h (186.4 mph) rapidly and safely. We'll explain the differences below.

Regenerative Braking vs Conventional Braking

The regenerative brake employed on the TGV turns the electric traction motors, which usually supply propelling power, into a generator that then converts the momentum of the train into energy which is then retransmitted as electricity. This is different to many other forms of energy based braking systems, such as those employed by the US and Germany in that the energy generated by such systems is not converted into heat via resistor packs and is substantially more energy efficient, has considerable stopping power (though no less than similar systems employed throughout the world) and reduces wear on other brake components that would normally be used to slow the trains.

So why is regenerative braking used on TGVs? Well, the answer is a complicated one but can be simply explained by looking at how other trains are slowed.

Quite simply, most trains employ a system that applies force directly to the wheels. This creates friction which in turn slows the train. It's true that trains typically employ one or more braking systems, some are electrically based, and some are mechanical in nature. These mechanical brakes which are referred to as conventional brakes are the reason why TGVs are braked in the way they are. More accurately, the limitations of conventional brakes are the reason why TGVs employ an electrical brake system as its primary form of braking.

TGV trains run at particularly high speeds and this is a key factor when it comes to slowing the train down. At high speeds, conventional brakes that apply force directly to the wheels produce substantial amounts of heat because of friction. As this heat increases, the amount of friction that is generated decreases and the brake becomes less effective and so creates a problem that required a more imaginative solution.

Electrical brakes, such as those employed in the US and Germany, actually get more powerful the faster the train is moving. They are amazingly effective at slowing trains but, there is one drawback - heat.

Usually, in most electrical brakes, the energy that is generated from braking has to go somewhere and that means transferring the energy to somewhere it can be converted into heat or transmitted as electricity. Typical electrical brakes transfer the energy into resistor packs which converts the energy into heat that is then exchanged with the air. This type of system is incredibly wasteful as you're losing a lot of the energy it has taken to propel the train as well as the energy that it has taken to stop the train. However, TGVs transfers this energy and transmits it back through the overhead wires as electricity to be used by other TGVs. Clearly a very clever system.

There is one down side to electrical brakes in that they are not very effective at slowing trains that are not moving very fast and are not that efficient. However, this is where TGVs second braking system comes into effect. Conventional brakes take over automatically as the TGV begins to slow to a point where they can be more effective. In real terms, the conventional brake begins to be blended alongside the regenerative brake in ever increasing form until the point where the regenerative brake is no longer having any effect on the train. This combined system then enables the driver to bring the train safely to a standstill.

So what about the third braking system? Well, the third braking system is about providing a method for bringing a TGV to a complete stop in the event the other systems cannot be used, such as if a fault occurs. Faults on TGVs are incredibly rare but it remains important that safety is the primary consideration when designing any train.

The main conventional Train Brake on a TGV uses an electronic form of communication to tell the other vehicles in the consist when to brake and by how much. If for some reason this electronic system doesn't work, the driver can use the Backup Brake Lever (A2) to command the brakes to slow the train.

The Backup Brake is a PBL (Presse Bouton Locomotive) type in that you set it at the pressure you want and the system will hold that pressure when the handle is released.

24 ON-BOARD SYSTEMS: POWER SUPPLY

The SNCF TGV Duplex 200 Series is a multi-voltage operating train which means it can draw power from a variety of overhead power systems. Europe uses a variety of different forms of power and, as TGVs do travel into other countries, it's important to be able to use the power in that country.

In and around Marseille, the overhead wires operate on a 1500 Volt DC system (DC meaning Direct Current). To draw power from this system, you must select DC from the Pantograph Mode control (A15), labelled as C on the desk.

LGV routes throughout France use the 25 kV AC system (AC meaning Alternating Current), and you will need to select AC from the Pantograph Mode control (A15), labelled as LGV on the desk.

Some countries of Europe use the 15 kV AC system (not represented in our route), to use this system, select AC from the Pantograph Mode control (A15), labelled as M on the desk.

CHANGING PANTOGRAPH MODES IN MOTION

These electrical systems can be changed and selected even whilst the train is in motion and, as you drive our route, you will be required to change over from the DC system employed at the Marseille end to the LGV system. To do this, follow the steps below:

1. If power is applied to the train, return the Power Handle (A5) to Off.
2. As you approach the power changeover point, toggle the Circuit Breaker (F38) to Off and then On.
3. Set the Pantograph Control (A13) to Lower, labelled 0 on the desk.
4. Set the Pantograph Mode (A15) to the power type of the approaching section. If approaching the LGV section, select AC (labelled LGV on the desk). If approaching the end of the LGV at Marseille, select DC (labelled C on the desk).
5. As the rear of the train passes into the new power section, you will see a sign which reads REV at the side of the track. This REV sign denotes the point where the rear of the train has cleared the previous section and advises you are safe to raise the pantograph. Set the Pantograph Control (A13) to Normal (or N as labelled on the desk).
6. When the 'Arm Breaker' Symbol is announced on the Indicator Panel (F36), flick the Arm Circuit Breaker switch (F39) to On, to re-engage power control.
7. You can now apply power again.

1. On approach to the station, you should always manage your speed appropriately. The timing of the brake applications will need to be timed properly to ensure a smooth and stable stop. As such, you will need to think and act well ahead. Begin approximately 1.6 to 2.4 km (1 to 1.5 miles) from the station by applying a 1 Bar reduction with the Train Brake Lever (A3). 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.
2. The aim is to apply sufficient brake pressure once and only adjust it when you reach the start of the platform. As a general rule, you should always aim to be at no more than 40 km/h (24 mph) depending on the platform length. For short platforms, you should aim to be at no more than 24 km/h (14 mph) when you reach the start of the platform.
3. Move the Train Brake Lever (A3) to increase the brake pressure to around 2 Bar.
4. As your speed reduces below 10 km/h (6 mph), move the Train Brake Lever (A3) to 1 Bar to ensure the stop is smooth and does not introduce a sudden stop as the brake pads bind. Friction increases the slower your speed and easing off on the brake application will limit this.
5. Once the train has reached a full stop, move the Train Brake Lever (A3) to 3 Bar to secure the train.

PASSENGER DOOR CONTROLS

Passenger entry and exit doors on each side can be operated independently i.e. either left side or right side. Simply press the Open Passenger Doors Left (G46) or Open Passenger Doors Right (G48) button.

To close the doors, press the Close Passenger Doors (G47) button. See Pages 7, 13 and 18 for more details.

26 EMERGENCY BRAKE RECOVERY

At some point in your Train Sim World driving career, you will encounter an emergency brake application. Whatever the reason, here are some simple steps to get you back on your way quickly:

1. You should always begin by understanding why you received an emergency brake application. Was it an intervention by an on-board safety system? Was it because you tripped a trackside mechanism? Or something else? Understanding the exact cause can significantly help you avoid similar situations in the future.
2. If you can hear an alarm, and you are still moving, you must wait for the train to come to a complete stop before you can acknowledge or cancel the alarm.
3. Acknowledge/Cancel the alarm by pressing the **Alerter Reset Control** (See Settings > Controls menu). All audible alarms should have been silenced. If you can still hear alarms, please refer to the appropriate section about on-board safety or signalling systems.
4. Once at a complete stop, and all alarms have been acknowledged or cancelled, you should always ‘reset’ your driving controls. Resetting simply means to restore all the driving controls to their default position, neither applying power or braking (except where brake needs to be applied to prevent you from free-rolling) and the direction control or Reverser is set to its neutral or off state.
5. Once all the driving controls have been reset, move the Reverser to Forward.
6. If you have the Power Handle Lever in a brake setting, move it into a low throttle position to begin applying power. Note that the some trains require a power setting before the brakes will begin to release.
7. Once the brakes have fully released, the train should begin to move.

VACMA

VACMA 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 VACMA

The default state of the VACMA system is disabled, to enable the system you must be seated in the appropriate driving seat and the train must be stationary. Use the **Warning Devices Enabled** control (See Settings > Controls menu). Repeat to disable the system again.

USING VACMA

Once VACMA has been enabled, and the train is in motion, you will hear an audible alarm every 60 seconds once the train exceeds 8 km/h. If you do not respond by pressing the **Alerter Reset Control** (See Settings > Controls menu) after 5 seconds the train will apply an emergency application of the brakes.

You will need to wait for the train to come to a complete standstill and cancel the alarm before being able to drive away.

OTHER CONTROLS

VACMA can also be enabled/disabled via the in-cab switch. See Pages 8, 15 and 19 for the location of the in-cab switch.

In and around Marseille, the track is embedded with beacons that transmit information about signals and speed limits. The on-board receiver interprets the signals and displays information about the current expected speed along with lights and sounds that alert the driver if the train travels more than 5 km/h over the expected speed. If the driver doesn't take action to reduce speed quickly enough, the system applies emergency braking.

ENABLING OR DISABLING KVB

The default state of the KVB system is disabled. To enable the system you must be seated in the driving seat and the train must be stationary. Use the **Signalling Systems Enabled** control (See Settings > Controls menu). Repeat to disable the system again.

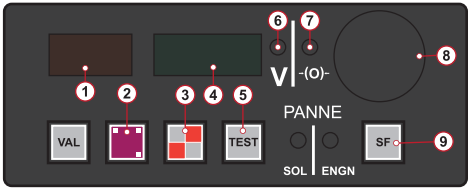
OTHER CONTROLS

KVB can also be enabled/disabled via the in-cab switch. See Pages 8, 15 and 19 for the location of the in-cab switch.

COMPONENTS OF KVB

KVB has its own unit (shown opposite) which displays various indications and includes several controls that can be interacted with. The unit itself can be found on Panel D.

The functional elements as represented in Train Sim World are explained as follows:



1. Orange display warns of upcoming speed restrictions.
2. KVB Shunt button.
3. KVB Pass Danger button.
4. Green display confirms when speed restrictions are enforced.
5. KVB Test button performs a self-test of the KVB Unit.
6. V indicator advises when you are exceeding the current speed restriction by 5 km/h or more.
7. Enforced Braking Indicator advises when the system has activated the emergency brake.
8. Alert Indicator advises when an alert has been triggered by KVB.
9. Clear Light button clears the Alert Indicator.

The chart opposite explains the various indications and how you should react.

The KVB system displays this signal when the maximum authorized speed is greater than 160 km/h.

The yellow P is displayed to warn of a reduction to 160 km/h. It's followed by the green P when the reduction is enforced.

The yellow double-zero is displayed to warn of an upcoming stop signal with an approach speed of 30 km/h. It's followed by the green double-zero when the reduction is enforced.

When the KVB system intervenes with an emergency brake application, the display shows this message.

Active speed control when authorized speed is below 160 km/h. When this is displayed, the driver must follow posted line speeds.

The yellow L is displayed to warn of a temporary speed reduction. It's followed by the green L when the reduction is enforced.

The yellow triple-zero is displayed to warn of an upcoming stop signal with an approach speed of 10 km/h. It's followed by the green triple-zero when the reduction is enforced.

30 CROCODILE

The Crocodile system is one of the oldest train safety systems operating in France. Status of upcoming signals is transmitted from electrical devices (named for their resemblance to a crocodile lying between the rails) that connect to on-board equipment located on the bottom of the train.

ENABLING OR DISABLING CROCODILE

The default state of the Crocodile system is disabled, to enable the system you must be seated in the appropriate driving seat and the train must be stationary. Use the **Signalling Systems Enabled** control (See Settings > Controls menu). Repeat to disable the system again.

USING CROCODILE

When the train passes over a warning for an open signal, the driver hears a tone in the cab. If the driver passes an indication for an upcoming closed (stop aspect) signal, the Alert Indicator on the KVB panel flashes. The driver must press the Acknowledge button (A11) to cancel the alert. When acknowledged, the light stops flashing but remains lit until the signal is passed.

OTHER CONTROLS

Crocodile can also be enabled/disabled via the in-cab switch. See Pages 8, 15 and 19 for the location of the in-cab switch.

When the train is travelling on a high-speed line, signals and speed control are displayed in the cab in a specially designed display (Panel E). The current maximum speed and any upcoming speed reductions are displayed on this panel.

ENABLING OR DISABLING TVM-430

The default state of the TVM-430 system is disabled, to enable the system you must be seated in the appropriate driving seat and the train must be stationary. Use the **Signalling Systems Enabled** control (See Settings > Controls menu). Repeat to disable the system again.

OTHER CONTROLS

TVM-430 can also be enabled/disabled via the in-cab switch. See Pages 8, 15 and 19 for the location of the in-cab switch.

USING TVM-430

With the arrival of high speed lines in France, the TVM (Transmission Voie-Machine, or track-to-train transmission) signalling system was introduced. Like the blocks in lower-speed areas, TVM-430 blocks are about 1,500 meters apart, but the track is embedded with a series of sensors that report the status of blocks well ahead of the distance visible to the driver. This allows the on-board computer systems to determine a safe speed for the train's current location based on its stopping ability. TVM-430 works well on the LGV lines where all of the equipment has similar characteristics because the spacing and timing of signals corresponds to the typical stopping distance of TGV trains.

TARGET SPEED INDICATORS

The on-board TVM-430 equipment makes the driver aware of the current maximum safe speed with an in-cab display system. As the train approaches a speed reduction, a stop, or a block occupied by another train, the TVM-430 display warns the driver to slow by displaying not only the upcoming required speed, but also a target speed that the driver needs to match to decelerate safely. If the driver stays above the pre-programmed deceleration curve by not reducing speed rapidly enough, the system applies the brakes.

The TVM-430 display provides a series of indications as described on the following page:

Authorisation to increase speed is indicated with white numbers on a green background. You must not exceed the speed displayed.

Warning for an upcoming reduced speed is indicated with black numbers on a white diamond background. If the speed of the block after the next one is lower, these numbers will flash.

A slower execution speed is indicated with white numbers on a black background. This is used when the current maximum speed for this train is lower than the line's maximum speed.

An upcoming stop is indicated with black zeros on a white diamond with a red background.

A full stop is indicated with three red squares.

TVM-430 essentially replaces the role of the lineside speed boards and signals. When travelling at speeds of in excess of 300 km/h, it is impossible, even for the most alert drivers, to reliably read the signs and signals at the side of the track. Instead, those indications are shown to you in the cab.

As you drive, upcoming changes in speed are displayed in the 'egg box', the aptly nicknamed TVM-430 display. If you are authorised to accelerate the train, you may do so if the indication is white numbers on a green background. If you are expected to decelerate the train, the indication will change to black numbers on a white diamond. If you are to continue deceleration to an even lower speed than is shown, the black numbers in the white diamond will flash on and off.

Each time the system updates, you'll hear a simple tone to draw your attention to it. Simply regard the values shown as the speed you need to reach, whether that's higher than your current speed or lower.

If you need to come to an immediate stop, three black zeroes on a white diamond on a red background will advise you to immediately brake your train to a stop. When you're within the range for a complete and full stop, three red squares will be shown.

The LGV Méditerranée route in Train Sim World 2 includes two separate signal systems. There is a traditional block-signalling system that has been in use in France since the 1930s, which we'll go into in greater detail below, and the cab-display dynamic block signalling system that was introduced in the early 1970s with the first high-speed TGV lines. That system, as has been explained in previous pages, was further developed in the 1980s into the system that is used today and is used throughout Europe on high speed routes.

THE VERLANT SYSTEM

The consolidation of French railway signalling into a single standard was overseen by Eugene Verlant, an official with the Compagnie des chemins de fer de Paris à Lyon et à la Méditerranée, a railway that operated in the early 20th century. The Verlant System uses two types of fixed signal blocks. A block is designed to allow enough distance for a train to stop in bad conditions.

High-traffic areas such as around Marseille use BAL (Bloc Automatique Lumineux) blocks of about 1,500 to 2,000 metres. When a train occupies a block, the train prevents other trains from entering the block without stopping. The signals also offer enough advance notice for the train to slow down before reaching a stop signal.

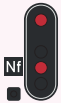
The second type of block in the Verlant System is BAPR (Bloc Automatique à Permissivité Restreinte) which uses blocks of up to 15 km in low-traffic areas. This type of signal is not in use on LGV lines.

The Verlant System initially used mechanical signals, but now almost exclusively uses coloured lights to display Stop, Proceed, Warning, and speed-control aspects. Signal heads may include different numbers of lamps and include a plate with a letter ‘F’ (franchissable, or ‘passable’) or a plate with the letters ‘Nf’ (non-franchissable, or ‘non-passable’) alongside a small round blue-white light called an œilleton ("eyecup"). When lit, the œilleton turns a non-passable 'Nf' signal into a passable ‘F’ signal.

Train Sim World 2 features these types of signals near Marseille on overhead gantries and posts and as dwarf signals in and around yards and sidings.

34 MAIN ASPECTS: COLOUR POSITION LIGHT

The Verlant System includes various signal head configurations that allow a single head to display as many aspects as necessary. Heads are mounted to posts or on overhead gantries. See the table below for an explanation of the various aspects:

Example	Meaning
	**Stop (*Carré*)** A double red aspect with a 'Nf' plate indicates a Stop aspect. This aspect controls access to switches or sections of track where routes cross. The *œilleton* will not be lit with a double red *Carré* (*Carré* means 'square' which is a holdover term from the mechanical signalling system) aspect.
	***Sémaphore*** A single red light indicates the *Sémaphore* aspect. The train needs to make a temporary stop but may then proceed carefully at low speed (not exceeding 30 km/h) "on sight" and be ready to stop. In this case, there may be another train ahead. The *Sémaphore* aspect can be displayed with an 'F' plate or a 'Nf' plate with the *œilleton* lit.
	**Flashing Red** A variation on the *Sémaphore* aspect indicates that the train can proceed at a maximum speed of 15 km/h but must be ready to stop for any obstruction.
	**Stop (*Carré*)** Violet-coloured lights provide the same indication as the *Carré* aspect, but are typically seen in and around sidings and yards controlling access to the main line. A violet light is also shown at the end of a line, in sidings or terminus stations.

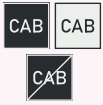
Example	Meaning
	**Warning (*Avertissement*)** A solid yellow light is a warning to the driver that the next signal aspect is showing a Stop aspect such as Carré or Sémaphore.
	**Flashing Yellow** A variation on the *Avertissement* aspect warns of a Stop aspect at a shorter than typical distance.
	The *Bande lumineuse jaune horizontale* is displayed above a signal to indicate a shorter than normal distance to an obstruction such as another train ahead or a signal protecting a junction.
	**Slow to 30 km/h** The *Ralentissment-30* aspect provides a warning to pass the next signal at no more than 30 km/h. A third flashing yellow light indicates an approaching junction is at a shorter than normal distance.

Example	Meaning
	**Slow to 60 km/h** The *Ralentissment-60* aspect provides a warning to pass the next signal at no more than 60 km/h. A third flashing yellow light indicates an approaching junction is at a shorter than normal distance.
	**Reminder 30 km/h** The *Rappel-30* follows after the *Ralentissment-30* signal and is the start of the 30 km/h restriction. The lower yellow light can also add the Warning or Flashing Yellow aspect to this signal to indicate an upcoming stop aspect as shown in the example opposite.
	**Reminder 60 km/h** The *Rappel-60* follows after the *Ralentissment-60* signal and is the start of the 60 km/h restriction. The lower yellow light can also add the Warning or Flashing Yellow aspect to this signal to indicate an upcoming stop aspect as shown in the example opposite.
	**Proceed** The *feu vert* or green light aspect indicates that it is safe to proceed into the block ahead.

Example	Meaning
	**Slow** The *feu vert clignotant* or flashing green light warns that trains should begin to slow as an upcoming speed restriction is below 160 km/h.
	**Proceed at 30 km/h** White lights allow a train to proceed at less than 30 km/h over a junction. Often these indicate a path from a siding or yard on to the main line.
	**Shunting Permitted** **The** *feu blanc clignotant* advises that trains can proceed within the yard or sidings for shunting movements only over a short distance.
	A series of white lights positioned above a main signal head indicate an upcoming diverging route. A single white light indicates divergence to the left whereas double white lights indicate divergence to the right. Directional signals such as those shown in the examples opposite will feature as many lights as is necessary to cover all possible routes ahead. Additional lights indicate the next route over, counting from the left side.

Example	Meaning
	An upcoming speed change for a diverging route (other than the yellow aspects that warn of 60 km/h and 30 km/h) can be indicated with an additional speed board. This lighted speed board will show a number if there is a reduction on the current route ahead or a white bar if there is no speed change ahead.
	A diamond-shaped board with a number warns of an upcoming speed change.
	A square-shaped board with a number and a board with the letter 'Z' indicates the beginning of a speed change.
	Indicates the point where the driver should lower the pantograph in preparation for an approaching change over point.

Example	Meaning
	These signs indicate changes in the overhead power supply. The 1500 Volt (1.5 kV) DC supply is used in and around Marseille and you will see this sign as you approach the city limits, as shown on the first sign. The second sign indicates a change over to the LGV 25000 Volt (25 kV) AC supply.
	Provides advanced warning of an approaching power change over point.
	Provides advanced warning of an approaching neutral section. For TGV operation, there is no need to manage neutral sections as it is handled entirely automatically.
	This sign marks the point where the neutral section ends.

Example	Meaning
	Certain signs and signals are preceded by warning marker boards which count down as you approach. The signs are positioned at 100 metre intervals starting at 300 metres from the sign or signal.
	These signs mark the start of the high-speed lines with the appropriate advanced warning as well as end of operation sign.
	These signs mark the start of in-cab signalling (TVM-430) with the appropriate advanced warning as well as end of operation sign.
	This sign marks the point where the rear of the train has passed beyond the current change section. Once this sign is reached, it is safe to raise the pantograph as the rear of the train has cleared the relevant overhead equipment.

Example	Meaning
	This sign indicates that the train is approaching a switch or a series of switches. It marks the start of lower crossing speed restrictions and the starting point of a timetabled route.
	On high speed lines, signals cannot be read reliably but the line still needs to be broken into blocks to increase overall capacity on the lines. Instead of signals, a series of marker boards are placed which mark the boundaries of these blocks. The yellow arrow points to the track or line it relates to. On LGV routes, this board is also accompanied with a 'Nf' or 'F' board to denote whether it is a non-passable or passable board. They may also be accompanied with an *œilleton* lamp which can change the type of board when it is lit. Alongside the other typical French signalling signage, the board can also be accompanied with a *Bande lumineuse jaune horizontale* which denotes that the start of the next block is closer than normal.
	The white arrow on a violet background indicates the direction of an upcoming diverging route.

The Dovetail Forums are your one-stop destination for everything Train Simulator and Train Sim World related. We have an ever growing and vibrant community of train enthusiasts from all over the world, ranging from experienced railroad veterans to new players getting into the world of train simulation. So, if you haven't already, why not sign up for an account today and join our community – we'd love to have you on board!

See more at: **https://forums.dovetailgames.com**

Dovetail Live is an online destination which enables players to interact with Dovetail's products and each other in an environment tailored specifically to fans of simulation entertainment. Dovetail Live will evolve to become central to Train Sim World®, enriching the player experience in every way from offering rewards, building a community of likeminded players and helping every player find the right content to create their own perfect personal experience.

Signing up for Dovetail Live is completely voluntary. However, users that do sign up for it will receive exclusive benefits in the future.

See more at: **https://live.dovetailgames.com**

I have a problem downloading the Steam client, how do I contact them?

You can contact Steam Support by opening a customer service ticket at **https://support.steampowered.com**. You will need to create a unique support account to submit a ticket (your Steam account will not work on this page) and this will enable you to track and respond to any tickets you open with Steam.

How do I change the language of Train Sim World?

This is an easy process and will allow you to play Train Sim World in English, French, German, Spanish, Russian and Simplified Chinese. To change the language of Train Sim World, double-click on the Steam icon on your PC desktop, left click on 'Library', right click on 'Train Sim World', left click on 'Properties', and finally left click on the Language tab and select your preferred language.

How do I reset my display screen size settings?

It is possible to change the display screen size settings for Train Sim World from within the game. Changing display screen size settings is done from the Settings menu in the Display tab.

For any questions not covered here, visit our knowledgebase at **https://dovetailgames.kayako.com**

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