The Spirit of Train Simulation

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CRH380D HIGH SPEED TRAIN

DRIVER’S GUIDE

High speed electric locomotive for Train Simulator

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This CRH380D Pack includes the following features:

- Authentic custom sounds
- Detailed passenger view
- State-of-the-art driver’s cab with adjustable Cruise Control
- Flat-screen in-cab displays which show the next signal aspect, distance to next signal, next speed limit and the distance to it on suitably equipped routes. Information is also provided on acceleration and deceleration forces for greater passenger comfort, the Cruise Control speed set, brake pressures, door status, pantograph operation and much more.
- Operational speed monitor
- Audible alerts for driver vigilance, over-speed and more
- Realistic and definable train service number display on the exterior of the cars, set from the driver’s cab
- Red flashing tail light as per the real train
- Light lens flare effects
- Rain effects on windscreen and carriage windows

**Graphics settings**

Depending on your computer’s specification, you may wish to increase or decrease the various graphical detail options to get the best performance.

You can adjust these display settings in Train Simulator via the Main Menu screen using the Settings option in the top right area and then clicking on the Graphics button. The best results are when TSX Mode is enabled.

**JUST TRAINS NEWS**

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History

High speed Chinese rail services were first introduced in 2007 and operated with existing CRH (China Railways) rolling stock on existing lines which had been upgraded to speeds of up to 250 km/h (160 mph) and on newer dedicated high speed track rated up to 350 km/h (220 mph).

In September 2009 Bombardier announced an order for eighty Zefiro 380 high speed trains from the Chinese Ministry of Railways (MOR) to be produced at Bombardier’s joint venture, Sifang (Qingdao) Transportation Ltd.

The CRH380D is the latest generation of Chinese high speed train. Capable of running at 380 km/h, it is one of the fastest production trains in the world.
**Technical Specifications**

**Entered service:** 2012

**Formation:** 8 cars

**Capacity:** 664 seats (max.)

**Operator:** Chinese Ministry of Railways

**Car body construction:** Aluminium, wide profile

**Train length:** 215.3m (706ft)

**Car length:** Cab car: 27.85m (91ft 4in); Intermediate car: 26.6m (87ft 3in)

**Width:** 3.4m (11ft 2in)

**Height:** 4.16m (13ft 8in)

**Maximum speed:** 380 km/h (236 mph)

**Weight:** Empty: 462t (455 long tons; 509 short tons); Full axle load: 1,088t (1,071 long tons; 1,199 short tons)

**Power output:** 10 MW (13,400 Hp) (@380 km/h or 236 mph)

**Transmission:** AC-AC

**Acceleration:** 0.48m/s² (1.6ft/s²)

**Power supply:** Overhead catenary

**Electric system:** 25kV 50Hz AC

**Current collection method:** Pantograph

**UIC classification:** 8-car set: Bo’Bo’+2’2’+Bo’Bo’+2’2’+2’2’+Bo’Bo’+2’2’+Bo’Bo’

**Bogies:** ‘FLEXX speed’ with 2.7m (8ft 10in) wheelbase

**Braking system:** Regenerative and pneumatic; multiple working possible for two 8-car trainsets

**Track gauge:** 1,435mm (4ft 8.5in) standard gauge
CAB CONTROLS

Left console

1. **Disable external alarms button** – Press if you do not want to hear any alerts when you are in an outside view

2. **Emergency stop button** – Press to apply emergency braking

3. **Speaker**

4. **Left cab display**
1. Speakers
2. Centre display
3. Cruise control on/off switch – Forward = On; Rear = Off
4. Cruise control speed setting rotary control –
   Mouse-drag up/forward = increase speed
   Mouse-drag down/backwards = decrease speed
   The control operates in 10 km/h steps and can be set from 0 to 400 km/h. Always select 5-10 km/h under the speed limit to prevent over-speeding and automatic emergency brake application.
5. Pantograph up/down push switch
6. Headlight control – Back = Off; Middle = front white; Forward = front red
7. Cab interior light on/off switch – Forward = On
8. Horn push button
9. Master key – Right mouse-drag = On; Left mouse-drag = Off
1. Right display
2. Speaker
3. Wiper on/off push button
4. Sander button – Push to sand
5. Reverser switch – Forward = Forward; Centre = Off; Backwards = Reverse
6. Power/Brake handle – Centre = Neutral; Forward from centre in stages = increased power; Backwards from centre = increased braking
Due to the high operating speed of these trains, conventional signalling is ineffective as it would be very easy for the driver to miss a signal or not see it for long enough to react correctly – especially with ground signals. The signalling indications, therefore, are placed in the cab and the track signal system relays information directly to the display in front of the driver. Ground signals are still employed on routes, but are only used for operations at very low speeds, such as stock movements, or as an additional visual indication at station platforms.

In China the CTCS-3 signalling system is employed on high speed lines.
In China high speed trains have three types of service: Dxxxx, Cxxxx, and Gxxxx (xxxx represents the service numbers).

D series are used for 200-250 km/h passenger services.

C series are 300-350 km/h intercity passenger services, currently only used for the Beijing to Tianjin intercity line (C2001-C2300).

G series are widely used for 300-380 km/h passenger services, including long distance and other intercity lines.

Setting the train service code sets the outside display on each car:
1. **Train service number setting and display** – Drag your mouse over each digit to set.

2. **Current track speed limit**

3. **Next track speed limit** – No track speed limit will be displayed if your speed is below 10 km/h.

4. **Distance to next track speed limit digital display** – Maximum 10 km reading.

5. **Distance to next track speed limit linear display** – Operates when closer than 5 km to the next track speed limit.
6. **Safety system switch and status** – Mouse-click to turn Off/On. It is set to On by default. The safety system interacts with the Cruise Control when set to On. If your cruise speed is 5 km/h higher than the track speed limit, or if you meet a red signal driving above 45 km/h but do not brake in either case, the safety system will trigger an emergency brake application. If the safety system is set to Off, you can over-speed or pass a red signal with a speed over 45 km/h.

7. **Next signal aspect** – Green, yellow, two yellows, red.

8. **Signal Speed Advisory** – This will display in a green, yellow or red colour depending on the signal aspect.

**Signal Speed Advisory display notes:** The Signal Speed Advisory indication is just for reference to help you drive the train safely and smoothly.

For example, when you are running at 350 km/h and you will be stopping at the next station, the Signal Speed Advisory indication will advise you, via a lower indicated speed, that you will need to brake to reduce your speed to the indicated signal speed. Brake too early and you will be running late on the timetable, but brake too late and you will not have enough distance in which to stop safely and smoothly. Following the signal speeds will also keep you a safe distance from any train ahead of you.

If your speed is higher than the signal speed after you meet the next signal, the safety system will not trigger unless the signal speed is displaying 0 (zero).

Sometimes you will see no Signal Speed Advisory indication. This means that there is no Signal Speed Advisory in operation as the seven signal blocks in front of you are clear, and that you can drive as fast as the track speed allows or at the train’s maximum speed if the track speed limit is above the train’s capabilities.

Remember that the Signal Speed Advisory is just that – advisory. You can ignore it if you wish but you must obey the current track speed display.
Further indications on the left display

The left display shows these other indications depending on the state of the train.
The next track speed display does not show a figure if you are driving at less than 10 km/h:

The red warning text will display along with an audible alarm if you break the track speed limit:
1. **Speedometer** – in km/h 0-400

2. **Current track speed** – shown as the yellow bar running round the exterior of the speedometer

3. **Current train speed**

4. **Traction effort** – plus and minus in kilonewtons (kN). Try to keep the indication in the white area when accelerating and decelerating.

5. **Brake pressure applied**

6. **Brake pipe pressure**
Right display

1. **Train car number**

2. **Destination and departure station names** (non-operational in this simulation).

3. **Status alert indication** – indicates that the driver should pay attention to the information on the display.

4. **Car numbers** – Cars 02 and 07 have the red pantograph showing on top of them. This indicates that they are pantograph-equipped, NOT the status of the pantograph on each car.

5. **Blue bar** – This is the Cruise Control information area. The white Chinese text says “Cruise control speed set”. The white ‘0’ indicates the cruise speed set is 0 km/h (zero).

6. **Black bar** – other information area, showing in this case that the pantograph is raised. If no pantograph is shown on the display, the pantograph is lowered.
Further indications on the right display

The right display shows these other indications depending on the state of the train.

The green box with white lettering flashes and indicates that Cruise Control is in operation. The red box and text indicates that you have either operated the emergency brake or that the emergency has been triggered by the train monitoring system:

The double white box symbol indicates that the train doors are open:
Start Train Simulator and use the Quick Drive menu to select the CRH380D 8-Car and place it on the Chengdu-Suining line.

Select the departure station as Chengdu and the destination station as CangshanZhen.

Set the Environment as you wish, but we have set: Time of day: 12:00 PM, Weather: cloudy, Season: summer.

Press the Go! button.

When the simulation loads, enter the cab.

The first thing to do is set the train service number. In China high speed trains have three types of services (see page 13 for more information).

Set the train service number by placing your mouse over the area shown in the image below and dragging it up or down to select the required number. Move your mouse to the right to select the next number to set.
Setting the service number in the cab also sets the number which is shown on the external displays on each of the cars.

Note that the master key is already set to On, the pantograph is set to Up as shown in the right display, the reverser is set to Forward and the brakes are set On via the power/brake handle.

On the left display the track speed limit is showing 45 km/h, the next track speed limit is 45 km/h, the digital display distance to the next track speed limit is 0.0 km/h as is the linear display distance, the Signal Speed Advisory is showing 45 km/h in red, the next signal aspect is yellow and the Safety System is On.

On the centre display the train speed is zero, the track speed limit is 45 km/h, traction effort is zero, and the brake pressure applied and in the brake pipe is displayed.

Turn the headlights on by moving the switch forward one notch. Turn on the cab light as well, if you wish to do so.

Shut the car doors if they are open.

Move the power/brake controller handle to the 0% (centre) brake/power position. Refer to the HUD (controlled by the [F4] key) if that helps you set 0%. The brake pressure applied will reduce to zero.

Set the Cruise Control adjustment control to 40 km/h (always select 5-10 km/h under the speed limit to avoid over-speeding). The desired speed is displayed in the right display in the blue bar area.

Turn on the Cruise Control. The train will smoothly and automatically accelerate to 40 km/h, the speed which you set on the cruise speed setting control. You will see the tractive effort increase in the bottom of the centre display.

On the right display you will see the ‘Cruise control operational’ green box flashing. Sometimes the Cruise speed will creep up by 10 km/h, so keep an eye on it and put it back to the desired speed if it moves out of place. Failure to do so may result in you receiving an over-speed warning!

Monitor your speed and keep an eye on the left display. You will see the distance to the next track speed change from 0.0 km to 0.1 km, the next track speed limit display change to 160 km/h, then the distance change to 0.1 km.

It will then change again to 1.2 km and the next track speed will go up to 320 km/h. The actual track speed will also move up to 160 km/h (the next speed previously advised) accompanied by an alert sound and the yellow bar around the outside of the speedometer moving to 160 km/h. At this point you can safely adjust the Cruise Control speed up to 150 km/h as the track speed is 160 km/h. In the left display the Signal Speed Advisory will eventually turn yellow and indicate 160 along with a flashing yellow aspect signal indication.

Remember that the Signal Speed Advisory is just advisory. You can ignore it if you wish, but you must obey the current track speed display.

Meanwhile the distance to the next track speed limit is counting down to the next track speed limit of 320 km/h. As it passes the 0.0 km distance, the distance to the
next speed limit will be indicated and the track speed limit will increase to 320 km/h along with the yellow bar indication around the speedometer. Increase the Cruise Control setting to 310 km/h. You will hear an alert sound and the Signal Speed Advisory display will vanish as the next seven signal blocks are clear and the next signal aspect is green as indicated on the display.

Continue to monitor the next track speed and distance. If there are no speed restrictions apart from the line speed, the next track speed distance will display >10 km.

As we fly along the ground, monitor the various indicators and pay particular attention to the left display as you start the long approach to your destination station because you will need to obey the speed limits and consider the Signal Speed Advisory to slow down and prepare for arrival at your destination.

As you get closer to your destination you will see that the next track speed will show as 45 km/h and the distance to the next track speed limit will start to count down from 10 km.

At 7.5 km from the next track speed limit the Signal Speed Advisory will illuminate green and display 300 km/h. At this point immediately reduce the Cruise Control speed to 290 km/h.

At 5.5 km from the next track speed limit the Signal Speed Advisory will change to yellow and display 230 km/h along with a next signal aspect of a double flashing yellow. Immediately reduce the Cruise Control speed to 220 km/h. The train’s speed will decrease.

At 3.5 km from the next speed limit, the Signal Speed Advisory will show 160 km/h along with the audible alert.

Immediately turn off Cruise Control and gently apply the brakes (probably around 35%) by pulling back a little on the power/brake controller to help the train slow down. Don’t over-apply the brakes, and ease the controller back to zero when you have slowed to the desired speed.

At 2.0 km from the next speed limit, the Signal Speed Advisory will show 90 km/h along with the audible alert. If required, gently apply the brakes by pulling back a little on the power/brake controller to help slow the train. Don’t over-apply the brakes and ease the controller back to zero when you are at the desired speed. At this point a double yellow signal aspect will display.

The Signal Speed Advisory will shortly show 45 km/h in red along with the audible alert. Control the speed manually via the power/brake controller to ensure that you stop at the correct place at the platform.

When you have stopped, open the doors and this Quick Drive scenario will come to an end.

Congratulations on your first high speed CRH380D driving experience! Don’t worry if you didn’t drive perfectly – there’s a lot to take in at such high speeds and with this relatively complex signalling system. Run the same Quick Drive scenario again if you need more practice and you’ll soon be up to speed!
This CRH380D expansion comes with a set of scenarios designed to be used with the Chengdu-Suining route (not supplied with this CRH380D software but available to purchase from justtrains.net).

The CRH380D is Quick Drive-enabled and can be driven on any suitable Quick Drive-enabled route of your choice.

**Standard scenarios**

**CRH380D – Dawn Service**
Drive service G01 from Chengdu to Suining before returning with G02 as far as JiJin.

**CRH380D – Evening Rescue**
A CRH1A stopping service has broken down at JiJin and you need to tow the failed train to Suining, calling at all stations en route.

**CRH380D – Morning Service**
Drive service G01 from Suining to Chengdu on a bright summer morning in 2014.

**CRH380D – Night Express**
Drive service G21 from Chengdu to JiJin before returning with service G22 to Chengdu. You will call at all stations en route.
Free Roam scenarios

Two Free Roam scenarios are provided so you can drive the CRH380D and explore the Chengdu-Suining route at your leisure. These are found in the Drive>Free Roam section of the Train Simulator interface.

Chengdu Free Roam
Click on a train and take it for a drive!

Suining Free Roam
Click on a train and take it for a drive!

Using the CRH380D in custom scenarios

In order to use the CRH380D in a custom scenario you are working on, simply enable it in the Object Set Filter.

1. Start the Scenario Editor.
2. Open the left middle fly-out panel, and click the small blue cube to load the Object Set Filter in the right-hand fly-out panel.
3. Open the right-hand fly-out panel, which should now be the Object Set Filter.
4. Open the drop-down menu and navigate through the provider list to Just Trains.
5. Under the provider Just Trains is a list of the add-ons installed, with three columns of checkboxes on the right:
   a. The left column can be checked to enable an add-on for a route
   b. The middle column can be checked to enable an add-on for a scenario
   c. The right column is used to remove objects within an add-on from the browser list (but they are kept visible in the route/scenario)
6. Tick the middle checkbox for the CRH380D add-on.

7. The individual CRH380D cars can then be found in the Locomotive tab of the browser. Eight entries will be found: ‘CRH380D ‘A’ to ‘H’. They should be placed on the track in alphabetical order. Each car has an arrow above it to show you the correct direction in which to place it.

8. You will need to add a driver to your locomotive. To do this, click on the engine, click on the face with a cap icon on the top left slide-out menu, then click on the engine once more. A white icon with a blue driver image will appear above the engine. Double-click on this icon and a slide-out menu will appear in the top right corner of the screen. Enter a name in the top box, and in the lower drop-down box select ‘Express passenger’. When you have done this, click on the orange triangle in the bottom right corner of the screen to save your changes.
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