ÖBB 4020

Release Version 1.0

Whilst we do our utmost to reproduce sounds that are accurate and true-to-life, sometimes these sounds may not completely tally with the user's expectation. Due to the nature of the simulation, it is often not possible to reproduce a completely accurate soundscape for a variety of reasons such as limitations with our current technology and occasional inability to gain meaningful access to the locomotives being created. You should therefore regard the audio reproduction for our locomotives as authentic interpretations rather than perfect recreations.

1 Background

1.1 Loco

This three-piece electric rail car set, produced between the years of 1978 to 1987 for use as transport for urban areas. The 4020 set is comprised of three units: A Railcar (4020), an Intermediate Wagon (7020), and a Control Car (6020). Improving on the 4030 passenger comforts with new, wider and more comfortable benches.

1.2 Design & Specification

Builder	SGP , BES, BBC , ELIN , Siemens
Locomotive Weight	127.4 tonnes (3 Cars)
Vehicle Length	76.44ft (23.3m) – Railcar/Control Car 74.80 (22.8m) – Intermediate
Vehicle Width	9.42ft (2.87m)
Fuel Capacity	? US Gal
Vehicle Power	1609.227hp (1,200kW)
Top Speed	75 MPH (120km/h)
Safety Systems	Indusi/PZB
Tractive Effort	lb (? kN)

2 Rolling Stock

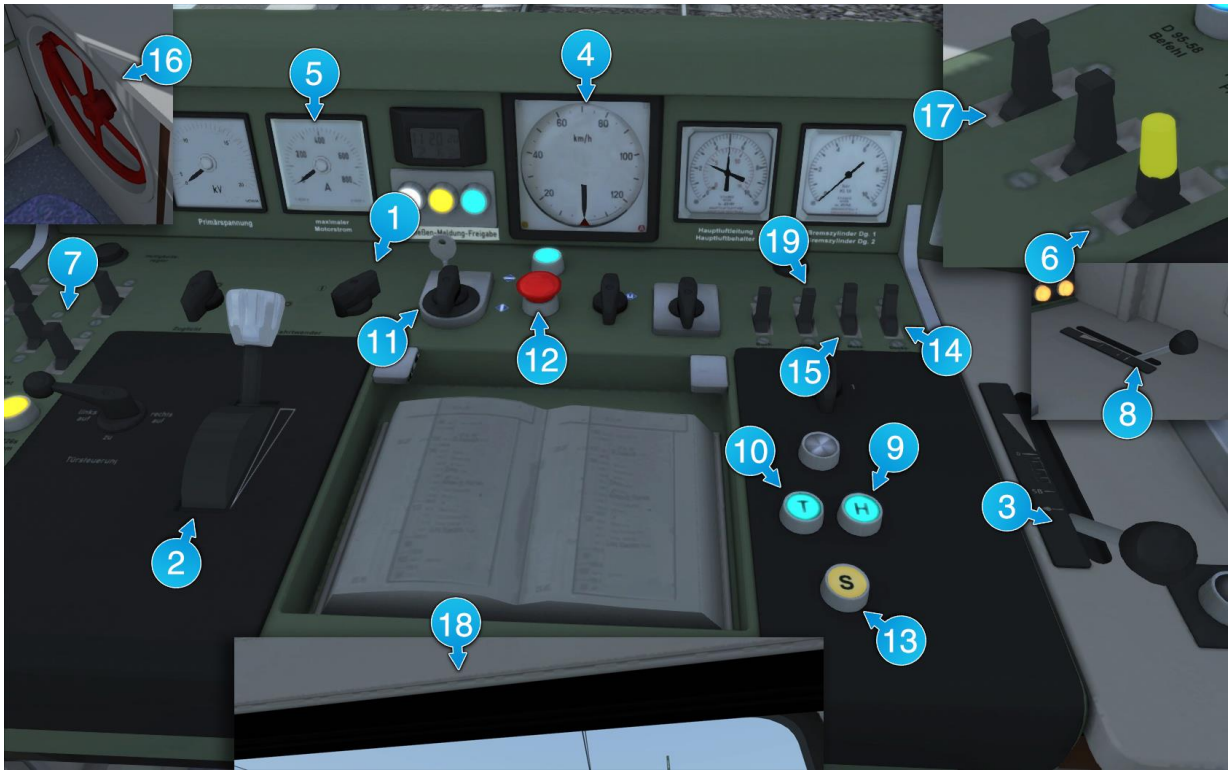
2.1 ÖBB 4020

2.2 ÖBB 4020 – New Logo

2.3 ÖBB 4020 – Red Grey

3 Driving the ÖBB 4020

3.1 Cab Controls



1	Reverser
2	AFB
3	Throttle Break
4	Speedometer
5	Ammeter
6	Acknowledge
7	Headlights
8	Dynamic Brake
9	Horn Hi
10	Horn Low
11	Pantograph Up/Down
12	Emergency Break
13	Sander
14	Cab Lights
15	Instrument Lights
16	Handbrake
17	Override
18	Blind
19	Desk Light

3.2 Locomotive Keyboard Controls

Key Equivalent	Action
D / A	Decrease or Increase Throttle.
S / W	Move Reverser Control Forward or Backward.
; / ‘	Decrease or Increase Train Brake.
[/]	Decrease or Increase Locomotive Brake.
</>	Decrease or Increase Dynamic Brake.
CTRL+Enter(NumberPad)	Turn on Indusi system.
Shift+Enter(NumberPad)	Turn off Indusi system.
Y	Increase AFB
C	Decrease AFB
Page Down	Acknowledge
End	Release
Delete	Override

3.3 General Keyboard Controls

Key Equivalent	Action
T	**Load/Unload.** Press to load/unload passengers or freight.
H	**Headlights.** Press to toggle headlights on/off
Shift + H	**Taillights.** Press to toggle taillights on/off
I	**Instrument Lights.** Press to toggle instrument lighting on and off.
L	**Cab Lighting.** Press to toggle the cab lighting on and off.
V	**Windscreen Wipers**. Press once to switch on and again to switch off.
Z	**(Expert) Engine Stop/Start**. By default engines will already be running at the start of a scenario. Press this button to stop and then again to restart the engine.
X	**(Expert) Sander**. Causes sand to be laid on the rails next to the wheels to assist with adhesion. Press once to apply sand and again to stop.
Space	**Horn.** Press to sound the horn.
/	**Handbrake On/Off.** This icon is displayed in the Coupling view.
Shift + Ctrl + C	Couple Manually**.**
Tab / Ctrl + Tab	Request authority to pass a signal at danger.

4 Indusi 60 Safety System.

Indusi 60 is an early variant of PZB that was introduced in 1934. The two system work similarly, though Indusi is largely reduced in functionality by comparison. There are two modes of operation; D – Passenger, and P – Freight. These two modes are differentiated by their timings and speeds.

Passenger	Freight
Speed Limit **after** 1000 Hz: 95 Km/h	Speed Limit **after** 1000 Hz: 75 Km/h
Time Limit **on** 1000 Hz: 20s	Time Limit **on** 1000 Hz: 26s
Speed Limit **on** 500 Hz: 65 Km/h	Speed Limit **on** 500 Hz: 50 Km/h

To enable Indusi, flick the Befehl40/Override switch into it's on position (towards the driver), then use the PZB keys (Ctrl + Numpad Enter, Shift Ctrl + Numpad Enter) to switch between modes. You should see the left-most blue light illuminate to indicate the system is in Passenger mode. The middle blue light indicates Freight mode. These lights are on constantly as long as Indusi is enabled, and the train remains in the respective mode of operation. The right-most yellow light provides feedback to the driver.

When running the train with Indusi enabled, just as in PZB, nothing will occur until you encounter either a 500, 1000, or 2000 Hz trackside magnet. If you were to pass a 1000 Hz magnet, with a distant signal at danger, you will have 4 seconds to acknowledge it by pressing and releasing the Acknowledge Switch in the cab or the train will go into Emergency Application; this is the same in both Passenger and Freight modes. If the Emergency Brakes kick in you will see the previously mentioned yellow light start to flash and hear an alarm tone until the train has stopped. If the 1000 Hz magnet is successfully acknowledged, you will hear a tone for the amount of time the Acknowledge switch is held down. You will then have the time limit shown in the table above to reach the 1000 Hz speed limit listed above. If you don't manage to lower your speed in time the brakes will go into Emergency Application, otherwise the yellow light will switch off – indicating the end of 1000 Hz monitoring.

If you encounter a 500 Hz magnet, with the signal still at danger, your speed will be immediately be checked, at this point you will need to be at the speed limit listed in the table for 500 Hz monitoring. If you're above that speed the train will kick an Emergency Brake Application, otherwise you will just continue as normal.

The last magnet will be the 2000 Hz. For this you simply need to be holding the Override switch at the moment of passing the magnet, waiting until the entire consist has passed it. A tone will be audible for the period of time you're holding down the Override switch. Again, if you fail to do Override the magnet monitoring, the brakes will kick into Emergency Application.

It is worth keeping in mind that it's possible to encounter these magnets in an order out of sequence with how they have been listed above.

5 Automatic Speed Control (AFB)

The ÖBB 4020 is equipped with an Automatic Speed Control which allows the driver to set the target speed. An on board computer will then apply the Throttle Control to obtain that speed and maintain it through further applications of the Throttle Control, or by applying braking when necessary. You can almost think of it as a kind of Cruise Control for trains.

To operate system, follow these steps:

Set the speed control to the desired value. In the speedometer a small red diamond “bug” will slide around to the configured speed in steps of 5km/h.

Release the Brakes.

Move the Throttle Control to the desired level of acceleration, at this point the train will begin moving and accelerate to the configured speed.

All speed changes should be managed with the Automatic Speed Control, simply change the target speed as required and the computer will apply Throttle and Brakes appropriately.

Increase Speed Set – Key Y
Decrease Speed Set – Key C

6 SIFA

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

The SIFA vigilance alerter is disabled at startup, but can be activated or deactivated by pressing ‘Shift+Enter(Numpad)’. While activated the SIFA light on the cab dashboard is normally switched off. While the train is moving the driver is required to confirm an alarm every 30 seconds.

When the 30 second alarm is triggered the SIFA light on the cab dashboard will illuminate, and after an additional 4 seconds an audible alert will sound.

After a further 2.5 seconds the emergency brake will be applied. This can be avoided by acknowledging the alarm at any stage by pressing the ‘Enter (Numpad)’ key.

7 Scenarios

For driving tutorials, please visit the Academy from the main TS2017 menu screen*

7.1 [ÖBB 4020] 01. To The Market

Mittenwald is celebrating the annual Bozner Markt. It is a sunny day and many tourists are eager to visit this market. You are driving an extended S5 service from Innsbruck Hbf to Mittenwald. There are no problems reported, so this should be a lovely trip into the Alps.

Duration: 60 Minutes
Difficulty: Medium

7.2 [ÖBB 4020] 02. S5 from Scharnitz

This morning, you will be taking an empty ÖBB 4020 unit out of the platform at Innsbruck and you will take this non-stop to Scharnitz. The weather isn't great, so make sure to drive carefully.

Duration: 40 Minutes
Difficulty: Medium

7.3 [ÖBB 4020] 03. Last Train to Innsbruck

It's the last service of the day! You will take charge of this ÖBB 4020 passenger service, starting at Mittenwald and ending at Innsbruck.

Duration: 40 Minutes
Difficulty: Hard

8 Acknowledgements

Dovetail Games would like to thank the following people for their contribution to the development of the ÖBB 4020.

Beta Testing Team
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