

Add-On for TrainSimulator 2021

# Through the Heart of Berlin

Along the S25 from Hennigsdorf to Teltow



virtualTracks.net

historische  e.O.

# Manual "Mitten durch Berlin" - Operation Series 476

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## 0. authors

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## 1. introduction

In contrast to West Berlin, the S-Bahn was a popular and extensively used means of transport in the capital of the GDR. At the end of the 1970s, when the procurement of new vehicles was not really getting off the ground, the *Deutsche Reichsbahn* decided to modernise its stock of old vehicles. This resulted in the new class 276.3, which became the class 476 when the *Deutsche Reichsbahn* and the *Deutsche Bundesbahn* merged. Basis for the reconstruction was the class 275, better known as "Stadtbahner".

The modernised trains of the class 275 got a rounded front with two large cab windows. The passenger compartment was equipped (in a contemporary style) with brown wood imitating Sprelacart walls. The seats were upholstered with brown plastic covers and the lighting now consisted of a fluorescent tube band. The windows, once for pulling down and with a narrow flap at the top, were replaced by fixed windows with a wide window flap. In addition, the doors were fitted with warning devices for the closing process with red warning lights and a bell, as was also used on the tram. Berlin trams and suburban trains were and are maintained and serviced in the Schöneweide repair works. Many Reko (reconstruction) series were built there, including the 476 series, so it was only logical that components from one transport system could also be found in another. Only towards the end of the 1980s were the bells replaced by three-tone warning systems. But in the add-on these bells will still be heard: as SiFa warning tone.

In the period after 1990, the brown seat covers were replaced by those with a so-called anti-graffiti pattern, as young people riding the S-Bahn no longer wore blue shirts but

permanent colour pencils. "Fool's hands smear table and walls" was already known in the early 20th century. When the tags of the pencils could no longer be seen on the colourful pattern, the under-challenged youth preferred to scratch the window panes ...

However, as the car bodies were still riveted, the vehicles were given their nickname: Rivet Reko.

These trains were part of Berlin's cityscape until July 4, 2000. In our add-on they live on, just as some things didn't happen in "Mitten in Berlin" at all, but did happen in the real world - such as the almost complete abolition of platform supervision.

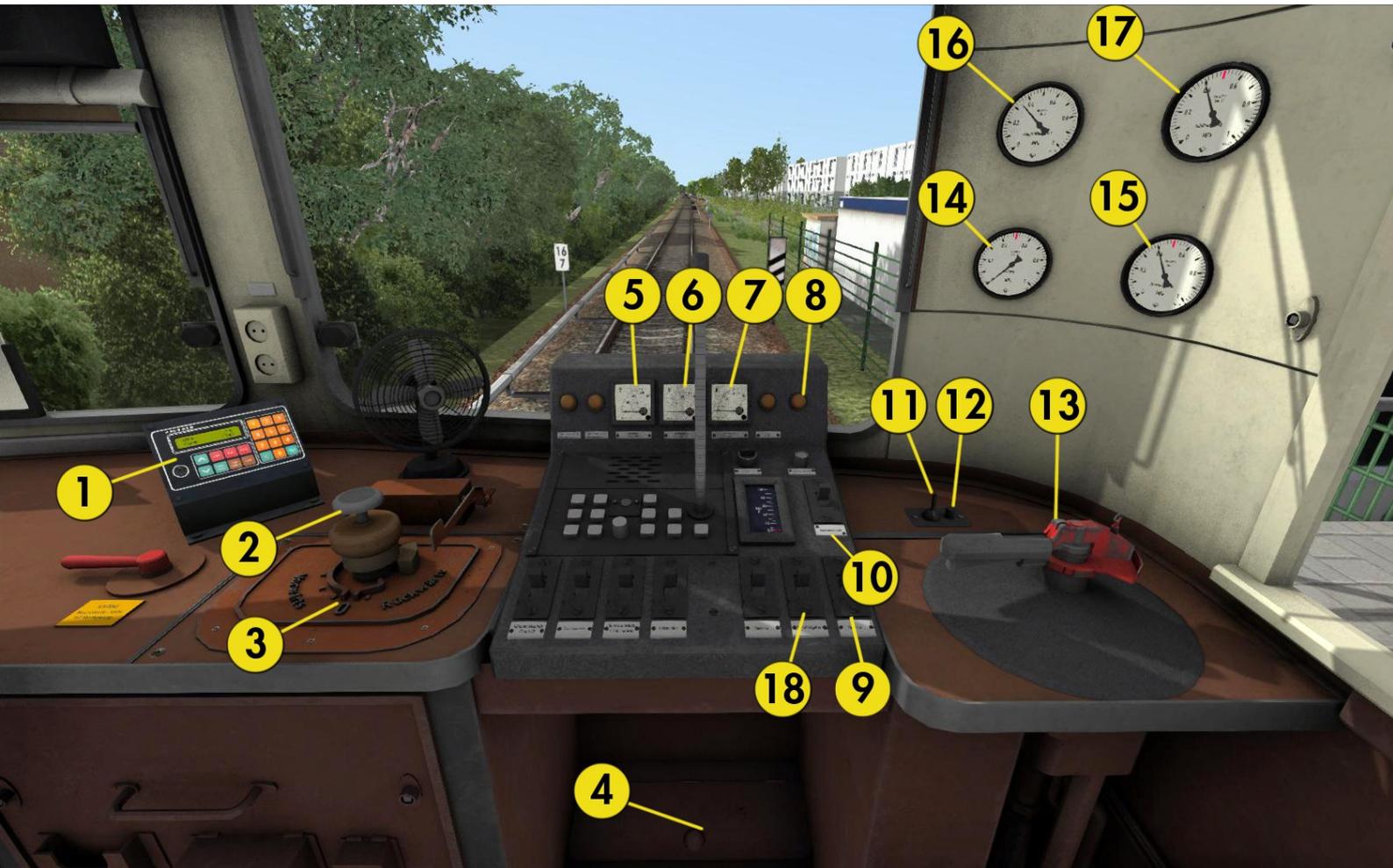
## **2. system requirements**

The following requirements must be met for the add-on:

PC with Windows 64-bit, on which the Train Simulator 2020 in the 64-bit version works installed Train Simulator 2021,  
installed add-on "Mitten durch Berlin".

The computer should have at least 8 GB main memory.

### 3. the driver's cab



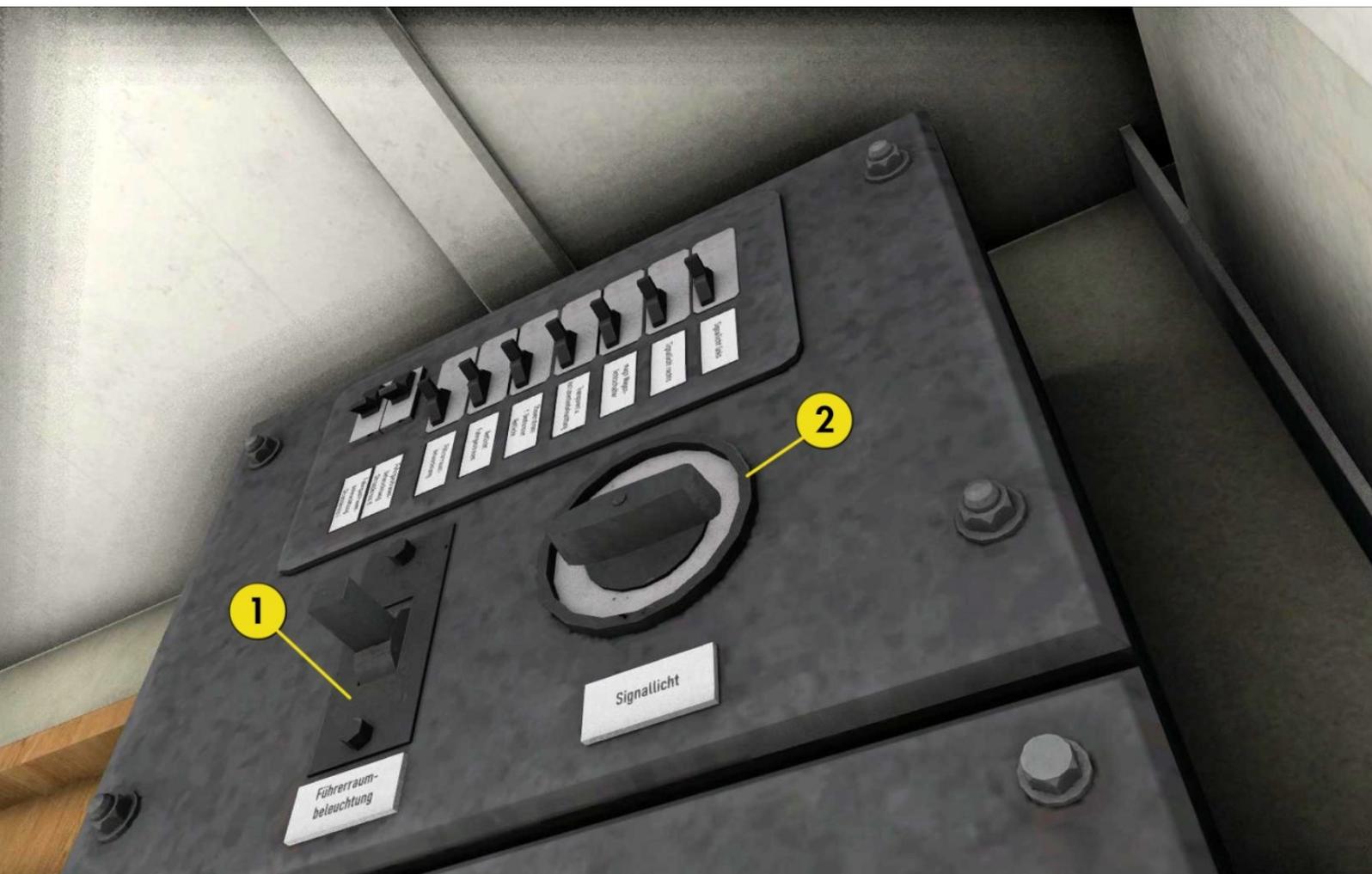
#### driver's cab

- |   |   |    |  |
|---|---|----|--|
| 1 | Kruger device                             | 9  | Door closers                                   |
| 2 | Master controller <b>(A)</b>              | 10 | Dimmer switch                                  |
| 3 | Direction reverser <b>(Shift+i, W, S)</b> | 11 | Windscreen wiper <b>(V)</b>                    |
| 4 | SiFa key (Q)                              | 12 | Wiper speed <b>(Ctrl+V)</b>                    |
| 5 | Busbar voltage (x2)                       | 13 | driver brake valve <b>(', [, ;, Backspace)</b> |
| 6 | Battery voltage                           | 14 | Pressure brake line                            |
| 7 | Transformer voltage                       | 15 | Brake cylinder pressure                        |
| 8 | SiFa warning light                        | 16 | Pressure main air tank                         |
|   |   | 17 | Print contactors                               |
|   |   | 18 | Light passenger compartment <b>(L)</b>         |



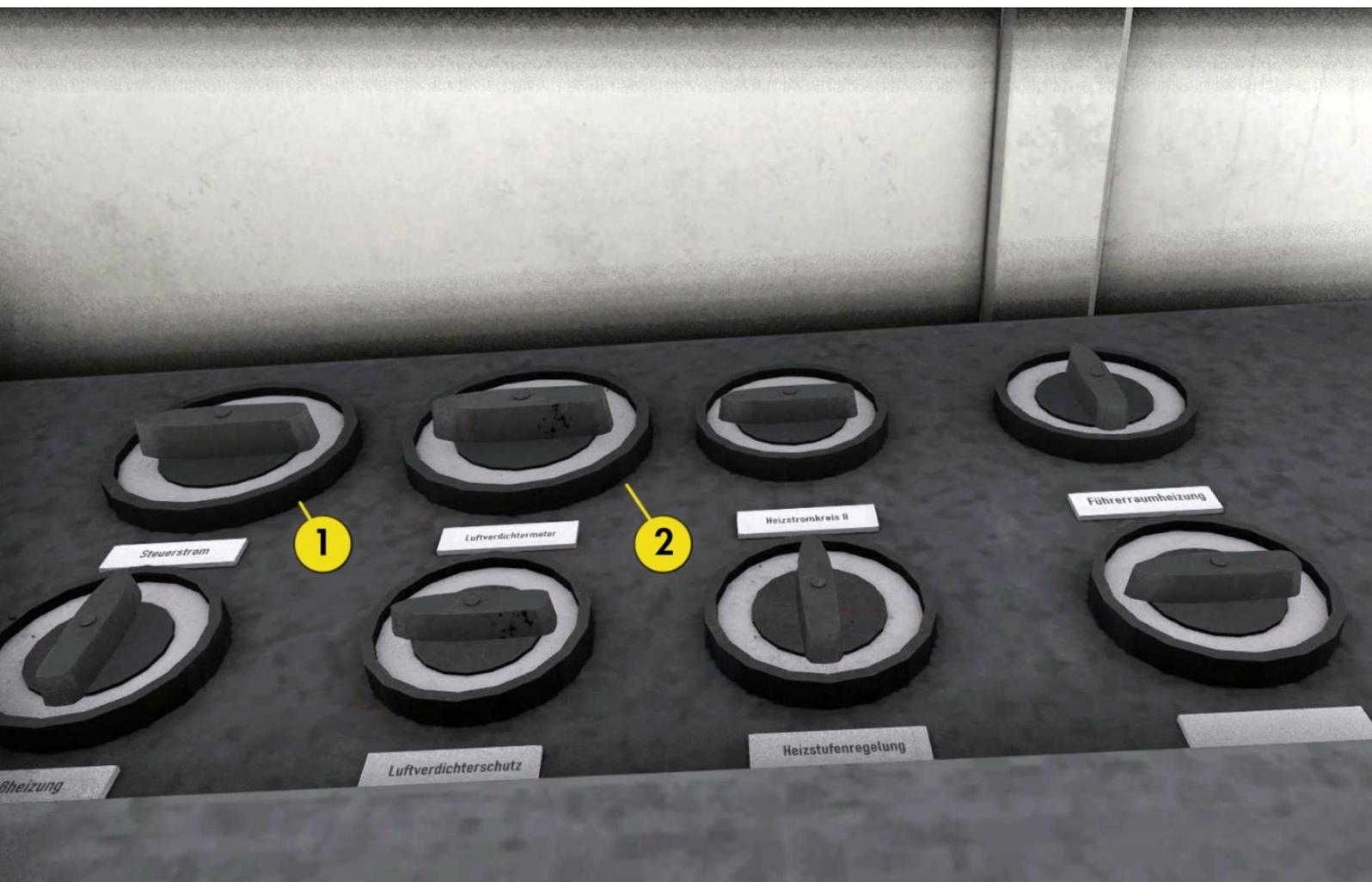
driver's cab on the passenger side

1st hand brake



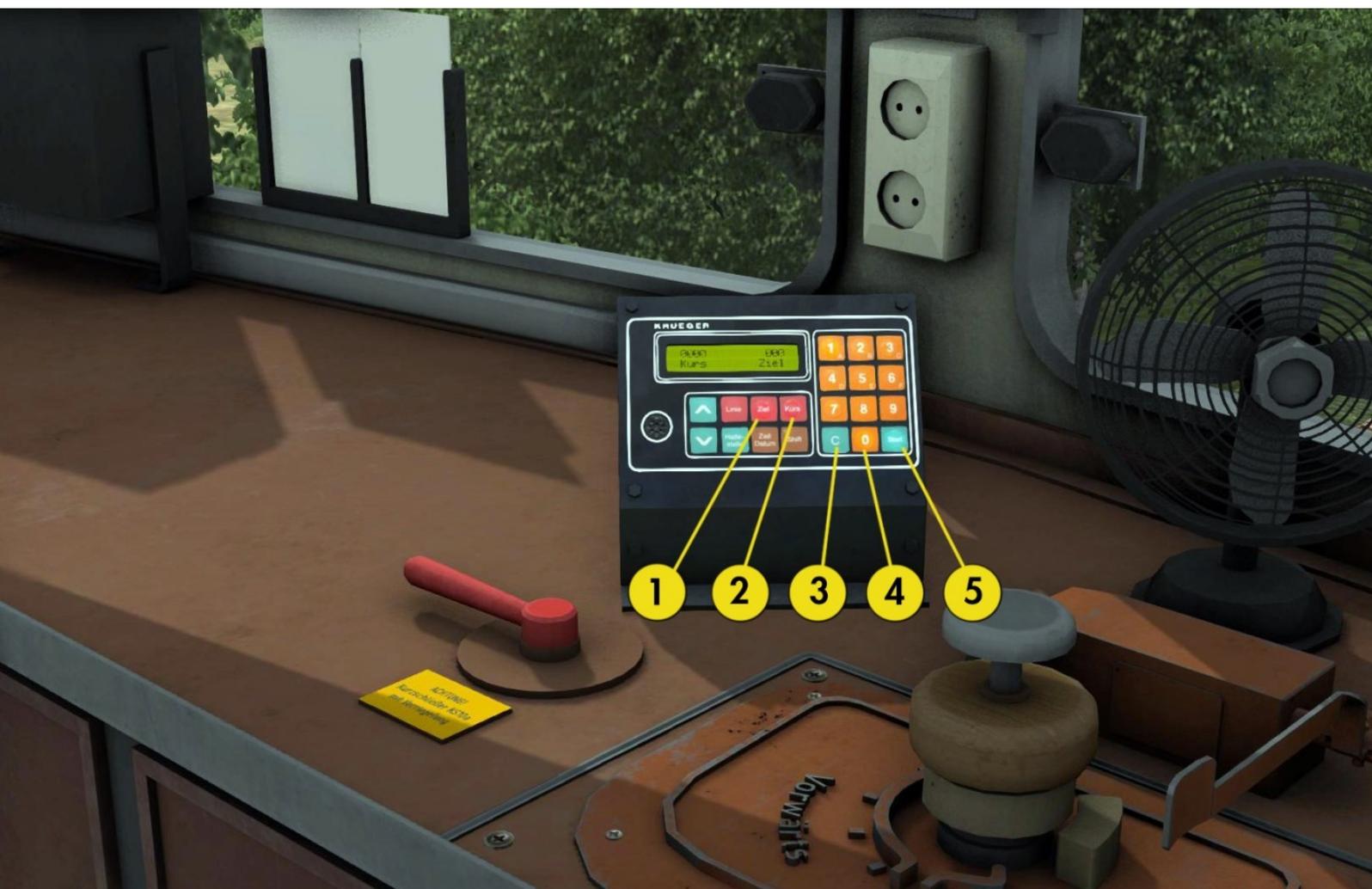
Driver's cab passenger side rear wall

1. cab lighting (**Z**)
2. signal light (**Ctrl + H**)



Driver's cab Driver's side Rear wall

1. control current (**Shift + M**)
2. air compressor contactor (**Shift + U**)



### Kruger device

1. destination selection
2. course selection
3. correction key
4. entering numbers
5. accept input

## 4. Start up

The train is offered - depending on the scenario - in three variants. Usually the state of the train can be recognized by the "key" (direction reverser on the master controller). If there is no key and there is no pressure on the main air pipe, the train is cold (continue with 4.1). If there is pressure on the main air pipe, the train has been driven until just before (continue with 4.2). If the reverser is set to forward 100% then continue with 4.3. A proper scenario writer will write the condition of the train into the briefing, (let's see if I always did this). All operations described in the following text with keyboard commands can also be done with the mouse in the driver's cab.

### 4.1 Train is cold (full start up)

The train is parked in a stabling facility and must be completely started up. The battery is switched on outside. First the driver's key is inserted on the reverser (**Shift+I**). Then switch the directional control to the pumping stage (press **"W"** once). Then press **Shift+U** to switch on the compressor, it must start audibly and the pressure on the main air line must start to rise. The compressor switches off automatically when 8 bar is reached. Next the control current contactor is to be switched on with **Shift+M**.

When the pressure in the main air line is fully built up, the handbrake can be released (**key #**). Before doing so, it is a good idea to take a look at the distance monitor (**F3**): click on the couplings on the right side of the picture and check whether the handbrake is applied at all. The direction reverser is switched to driving 100% with the key **W**.

Then switch on the top light (**H key**) and switch to white+white (press **Ctrl + H** twice) and set the Krüger unit (see Chapter 8). After that the train is ready for departure. Press **L** to switch on the light in the passenger compartment. In the tunnel, the passengers will thank you for it.

### 4.2 Transfer of trains from other Tf

The train has already moved, switch on the air compressor contactor (**Shift+U**) and the control current (**Shift+M**). Check the correct setting of the direction reverser, the top light and the Kruger unit.

### 4.3 Train is fully startstarted

Continue with section 5/6 depending on the situation.

## 4.4 Change of driver's cab

There are scenarios in which the direction of travel is changed. So you have to change the driver's cab. You can do this in the Train Simulator simply by pressing the **Ctrl+Minus** key. But wait. An S-Bahn driver can't just walk out the front and in the back either. There is a lot more to do:

### Leaving the previous driver's cab:

1. set the direction reverser to neutral
2. put the brake in position "end", the train must be braked.
3. pull off the direction reverser (**Shift+I**).
4. control current contactor off (**Shift+M**), compressor contactor off (**Shift+U**).

Now you may press **Ctrl+Minus**, if it is a full train (train with 8 cars) you may have to press three times.

### Entering the future driving cab:

1. attach the direction reverser (**Ctrl+I**)
2. switch direction reverser to Forward 100% (4 x **W**).
3. compressor contactor, switch on control current contactor (**Ctrl+U**, **Ctrl+M**)

## 5. door control

If the train stops at a platform, press the **T** key. This releases the doors. Not all doors open at the same time, a logic ensures that the doors open at random. So if you press **T** and wonder why nothing happens: wait and see. It's all right when the message appears in the top right-hand corner of the picture that the door open function has been activated.

**Important:** The train must have stopped at the platform before the last Ne 5 (the last H board). If the train stops behind the platform marker, which ends at the last H-board, the doors will not open anymore (due to the simulator). The time loop for the stop and the announcements are running anyway and the simulator evaluates the stop as taken place!

If the command "**Train < radio name> to <destination> - close doors**" comes from the supervisor **or if** Zp10 (white crossbar) **lights up** at the signal, the doors are to be closed with the Shift+T key or **with** the mouse using the relevant switch on the console. For the signals in the tunnel you have to look a bit closer. The optics have only 10 cm space to draw attention!

## 6. driving and braking

To drive the train, the handbrake and air pressure brake must be fully released. If this is not observed, the rear derailleur runs up (contrary to the prototype), but the train does not move. So please always make sure that the handbrake is released and that the train brake is ventilated.

Only one key is needed to drive: key **"A"**. In the simulation it functions as a driving switch and dead man's button. Press and hold down **key "A"** and the train accelerates. Approx. 500 m or when the permitted maximum speed is reached before the next station, you can release the key and the train continues to roll.

**Attention:** The driver's enemies are downhill sections with speed limits! For this, knowledge of the route is extremely important! When approaching a sloping track, simply release the driving switch well before reaching the permitted maximum speed. In connection with the braking system it is important to avoid using the brake by driving with foresight.

**Attention:** An old S-Bahn is not a racing car. You will notice that on uphill stretches the train has a noticeable "job" to do to get up the mountain. It is, therefore, good advice to gain momentum before uphill stretches and not to switch off the traction current on uphill stretches - unless it is operationally necessary.

The train has a Knorr passenger train brake with one release. The electro-pneumatic auxiliary brake was omitted due to the enormous programming effort and the low benefit in the simulation. This brake can be applied in several stages, but can only be released (completely) in one stage. The main disadvantage of this system is that it is exhaustible, i.e.: after release, the full braking power is not immediately available again.

The brake has 6 steps:

- 1 - Filling - for accelerated brake release,
- 2 - Release - for normal brake release,
- 3 - Loosening (small hole) - in our simulation meaningless,
- 4 - termination - brake pressure is maintained as it is (for cab changes),
- 5 - Hold - hold the brake pressure given by a filling surge,
- 6 - Apply - fill the brake, increase braking power,
- 7 - Quick braking - The brake is immediately filled completely.

While levels 1 - 6 are controlled with the **keys ;/'** (up) or **[** (down), level 7 can only be reached with the Backspace key.

So how do you get the train to the platform? A few simple rules that should always work:

**Rule 1:** You are good at braking when the train has about 50 km/h on the speedometer at the beginning of the platform.

**Rule 2:** At 70 to 80 km/h approx. 300 m before the start of the platform (0.3 km in the track monitor) give a filling impulse with an increase in brake pressure of 0.5 bar.

**Rule 3:** At 60 km/h approx. 160 m before the start of the platform (0.16 km in the track monitor) give a filling impulse with an increase in brake pressure of 0.5 bar.

Afterwards, if you feel you won't make it to the end of the platform, you can give an extra-long fill. The latter should be the exception. A good driver releases the brake at about 15 km/h to reduce the holding jerk.

## 7. SiFa

A path-time SiFa is installed in the train. This must be switched on when the train is stationary. Use keys **Shift+7** for this purpose. During the journey the key **Q** serves as SiFa acknowledgement. When the way/time for the SiFa is over, a yellow lamp on the driver's desk lights up first. If you do not react to this, a bell sounds. If you do not react to this either, the train is forced to brake until the SiFa alarm is cancelled with the **Q** button.

## 8. kruger device

The Kruger device is a device that displays the line and destination at the top of the train. It consists of an input device, which can be controlled with the mouse, and the two roll tape displays in the left window. Below the small box for the line, above the big box for the destination.

Proceed as follows to make the entry: Click on the **COURSE** key and right click on the keys for the desired line, then click on **Start**. You will hear the motor whirring until the setting is completed. Then click on **DESTINATION on the** left and type in the code for the desired destination on the right. The setting is accepted by clicking on the **Start** button.

If the conveyor motor runs and runs and runs and does not stop, you have entered an invalid code, for example, instead of 68 for Hennigsdorf, you have entered the digits 068. Then please repeat the entry with the correct code and the machine will return to normal function.

The codes for the Kruger device are given in sections 9 and 10 and are also displayed in the relevant places in the scenarios supplied.

## 9. target directory Kruger device

001		033	<i>Treptower Park</i>
002	<i>Ostkreuz</i>	034	<i>Schöneweide</i>
003	<i>Karlshorst</i>	035	<i>Grünau</i>
004	<i>Köpenick</i>	036	<i>Zeuthen</i>
005	<i>Friedrichshagen</i>	037	<i>Königs Wusterhausen</i>
006	<i>Erkner</i>	038	<i>Westkreuz</i>
007	<i>Potsdam Stadt</i>	039	<i>Charlottenburg</i>
008	<i>Griebnitzsee</i>	040	<i>Flughafen Schönefeld</i>
009	<i>Wannsee</i>	041	
010	<i>Grunewald</i>	042	<i>Altglienicke</i>
011		043	<i>Bernau</i>
012	<i>Westkreuz</i>	044	<i>Buch</i>
013	<i>Charlottenburg</i>	045	<i>Blankenburg</i>
014	<i>Zoologischer Garten</i>	046	<i>Pankow</i>
015	<i>Lehrter Stadtbahnhof</i>	047	<i>Schönhauser Allee</i>
016	<i>Friedrichstraße</i>	048	<i>Greifswalder Straße</i>
017	<i>Alexanderplatz</i>	049	<i>Ostkreuz</i>
018	<i>Hauptbahnhof</i>	050	<i>Spindlersfeld</i>
019	<i>Warschauer Straße</i>	051	
020	<i>Wartenberg</i>	052	<i>Oranienburg</i>
021	<i>Ostbahnhof</i>	053	<i>Birkenwerder</i>
022	<i>Sellheimbrücke</i>	054	<i>Hohen Neuendorf</i>
023	<i>Ahrensfelde</i>	055	<i>Probezug</i>
024	<i>Marzahn</i>	056	<i>Sonderzug</i>
025	<i>Springpfuhl</i>	057	<i>Werkstattzug</i>
026	<i>Strausberg Nord</i>	058	<i>Wannsee</i>
027	<i>Strausberg</i>	059	<i>Zehlendorf</i>
028	<i>Hoppegarten</i>	060	<i>Lichterfelde West</i>
029	<i>Mahlsdorf</i>	061	
030	<i>Wuhletal</i>	062	<i>Rathaus Steglitz</i>
031		063	<i>Schöneberg</i>
032	<i>Lichtenberg</i>	064	<i>Frohnau</i>

065	<i>Hermsdorf</i>	089	<i>Tempelhof</i>
066	<i>Waidmannslust</i>	090	<i>Hermannstraße</i>
067	<i>Schönholz</i>	091	
068	<i>Hennigsdorf</i>	092	<i>Neukölln</i>
069	<i>Tegel</i>	093	<i>Baumschulenweg</i>
070	<i>Gesundbrunnen</i>	094	<i>Schöneweide</i>
071		095	<i>Flughafen Schönefeld</i>
072	<i>Nordbahnhof</i>	096	<i>Grünau</i>
073	<i>Friedrichstrasse</i>	097	<i>Bundesplatz</i>
074	<i>Potsdamer Platz</i>	098	<i>Halensee</i>
075	<i>Anhalter Bahnhof</i>	099	<i>Westend</i>
076	<i>Flughafen Tegel</i>	100	<i>Jungfernheide</i>
077	<i>Rangsdorf</i>	101	<i>Spandau</i>
078	<i>Blankenfelde</i>	102	<i>Westhafen</i>
079	<i>Mahlow</i>	103	<i>Gesundbrunnen</i>
080	<i>Lichtenrade</i>	104	<i>Olympiastadion</i>
081		105	<i>Pichelsberg</i>
082	<i>Marienfelde</i>	106	<i>Stresow</i>
083	<i>Papestraße</i>	107	<i>Rathaus Spandau</i>
084	<i>Teltow</i>	108	<i>Falkensee</i>
085	<i>Lichterfelde Süd</i>	109	<i>Sonderzug</i>
086	<i>Lichterfelde Ost</i>	110	<i>Königs Wusterhausen</i>
087	<i>Vollring über Ok</i>	111	
088	<i>Vollring über Wk</i>	112	

Leading zeros must be omitted when entering in the simulator!

## 10. course directory Kruger device

1	S1	13	S4	25	S7	37	S10
2	S15	14	S45	26	S75	38	
3	S16	15	S46	27	S76	39	S41
4		16		28		40	S42
5	S2	17	S5	29	S8	41	S47
6	S25	18	S55	30	S85	42	
7	S26	19	S56	31	S86	43	
8		20		32		44	
9	S3	21	S6	33	S9	45	
10	S35	22	S65	34	S95		
11	S36	23	S66	35	S96		
12		24		36			

## 11. keyboard layout

<b>Backspace</b>	Emergency Braking
<b>Ctrl + -</b>	Change of driver's cab
<b>Shift + 7</b>	SiFa on/off
<b>#</b>	Apply/release handbrake
<b>Space bar</b>	Whistle
<b>A</b>	Master controller on
<b>; / ,</b>	Driver brake valve increase step
<b>F</b>	High beam on/off
<b>H/ Shift + H</b>	Peak light on/off
<b>Ctrl+H</b>	Choice of peak light
<b>Shift + I</b>	Inserting/removing the direction reversing key
<b>L</b>	Passenger light on/off
<b>Shift + M</b>	Control current contactor on/off
<b>Q</b>	SiFa reset
<b>T</b>	Opening doors
<b>Shift + T</b>	Close doors
<b>[</b>	Driver brake valve Reduce step
<b>Shift + U</b>	Air compressor contactor on/off
<b>V</b>	Windscreen wiper on/off
<b>Ctrl + V</b>	Wiper speed
<b>W / S</b>	Direction reverser
<b>Shift + Z</b>	Automatic quick set-up when cold pull
<b>X</b>	Sands
<b>Z</b>	Driver's cab lighting on/off

## 12. notes for scenario builders

If you want to build scenarios, there are a few things to consider. If train parts are to be coupled/uncoupled, it is essential to pay attention to the vehicle numbers. There is only a value set of 8 vehicle numbers. So it can happen that a vehicle number appears several times in the train (contrary to the prototype). This number has to be changed manually (in the scenario editor in the properties fly-out of the vehicle) until all vehicle numbers are unique. Otherwise planned coupling and uncoupling processes will NOT work.

After the vehicle number, you can give the vehicle properties in the scenario editor:

```
476_422-1;ziel=nn;kurs=n;umlf=nn;init=n;lght=n
```

476_422-1	Vehicle number from series, wagon number, EDP check digit
ziel=nn	The destination from the table for the Kruger device.
course=n	The line number from the table for the Kruger device
umlf=nn	number of the circulation (from 0 to 99)
init=n	Condition of the train: 0 after shutdown, 1 after handover, 2 started, 3 cold
lght=n	Light in the passenger compartment for an AI train (0 = off, 1 = on)

It is essential to ensure correct spelling and separation by semicolons, otherwise errors will occur when loading the respective scenario.

The vehicle is only partially suitable for AI traffic

## 13. bibliography

1] [https://de.wikipedia.org/wiki/DR-Baureihe\\_276](https://de.wikipedia.org/wiki/DR-Baureihe_276)