



# **Budd RDC (Rail Diesel Car) Penn Central RDC-1, RDC-2, RDC-3 for DTG Train Simulator by VNHRR**

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# 1 What is RDC?

## Origins

In the mid-20<sup>th</sup> century, passenger rail traffic in rural areas of the U.S. came under pressure due to increasing individual car ownership and the expanding highway network. In an effort to keep railroads competitive on less frequented passenger services, the Budd company of Philadelphia, PA, developed the RDC, short for Rail Diesel Car, a self-propelled, lightweight rail vehicle.



RDC's were offered in four configurations: the RDC-1, with seating for 89 passengers, the RDC-2, with seating for 70 passengers and a small baggage compartment, the RDC-3, which offered space for 48 passengers and had both baggage and mail compartments, and lastly the RDC-4, designed exclusively for mail/express cargo.



The first regularly scheduled RDC runs took place on the New York Central's Boston & Albany Railroad, with two cars operating between Boston and Springfield. Many other railroads acquired RDC's soon after, among them such famous names like the Boston & Maine, Baltimore & Ohio, Canadian Pacific, Chicago & Northwestern, Great Northern, Lehigh Valley, Pennsylvania-Reading Seashore Lines, Santa Fe,

or Western Pacific, and of course the NYNH&H, owning the second largest RDC fleet in the U.S. (not counting the Roger Williams variant), second only to the Boston & Maine's 79 RDC units. RDC's were also sold to railroads in Australia, Cuba, and Saudi-Arabia. Between 1949 and 1962, close to 400 units were built, several of which remain in service in Canada and the U.S. even today.

## Speed and Performance

The RDC's recipe for success was its good performance, inexpensive operation, and lightweight construction. At the heart of the RDC are two General Motors 110 diesel engines, each generating 275 horsepower, which are mounted under the car.





They give the RDC a high power-to-weight ratio of 8.68 horsepower per ton. Each engine drives one axle on its adjacent truck, giving the RDC exceptional acceleration and also allowing it to continue on its journey at reduced speed in case one engine fails.

The RDC's engines feature a torque converter transmission which allows the cars to accelerate smoothly and quickly. Upon reaching a speed of 55 mph, the torque converter is locked into direct drive.

Recommended cruising speed for the RDC is 70 mph, which requires only 55% of horsepower on level track. The maximum speed on level track is 83 mph at maximum load, 62 mph on a 1% grade, 42 mph on a 2% grade, and 28 mph on a 3% grade. The RDC accelerates to almost 60 mph within one mile.



## 2 Installation and System Requirements

**System Requirements:** Train Simulator 2015 must be installed, there are no special hardware requirements which would exceed those of the game itself. Backwards compatibility to older versions of Railworks/Train Simulator cannot be guaranteed.

### Installation:

1. Download the **RWP file** and save it in a secure place on your hard disk – just in case you might have to reinstall the cars at a later time.
2. Now install the RWP file with Train Simulator's Package Manager. To access that tool, **launch utilities.exe** in the main Train Simulator installation folder.
3. Note: You can find utilities.exe by right clicking on the Train Simulator title in your Steam Library, selecting Properties, and then clicking the "Browse Local Content" button on the "Local Files" tab.
4. *Once the Utilities are running, go to the **Package Manager Tab**, click the **Install** button, browse to the file from step one, click **Open**. The package will be installed now, after which you can already run your new cars in the game!*

### Using the Engines in Custom Scenarios:

5. *To be able to place the engines in a scenario, you will first have to enable the **object filter** for them in the scenario editor:*
6. *Open the left-hand middle flyout panel, click the button that shows a blue cube with an orange triangle.*
7. *Activate the flyout panel on the right side of the screen, and tick the checkboxes for developer "**VNHRR**" and product "**BuddRDC\_PC**"*
8. *You will now find the engines in the assets browser, listed as "Budd RDC ..."*

QuickDrive consists have been included with the package, you can run the engines directly from the QuickDrive menu.

Scenarios are available as extra downloads.

### 3 The Models in Detail

The RDC features custom couplers and sounds, dynamic numbers (real roster numbers), light rain effects, animated wipers and cab controls.

All three passenger-carrying versions of the RDC are included in this add-on, the RDC-1, the RDC-2, and the RDC-3.

Penn Central inherited its fleet of RDC's from the New Haven and the New York Central railroads, the latter of which inspired the 'zebra stripes' paint scheme at the cars' end sides. The Penn Central was always strapped for cash, which resulted in a big number of different paint- and patch jobs done on the rolling stock of their predecessor railroads. This add-on aims to model the most important liveries of Penn Central RDC's, featured are the PC RDC livery in plain silver with striped end sides and for the RDC-1 we have also included two of its rarer alternative liveries, one with a red band above the side windows, and one with a red band around the side windows (this car still wears its New Haven stencils, too).

You can select two options for each car from the list in the scenario editor:

- **With Passengers** and lit interior ("Psgr" suffix)
- **Empty car** with dark interior ("mt")

Below is an overview of all cars:



**Budd RDC-1 PC-1**



**Budd RDC-1 PC-2**



**Budd RDC-1 PC-3**



**Budd RDC-2 PC-1**



**Budd RDC-3 PC-1**



## 4 Cab Controls

Please refer to the two screenshots and the legend below for an explanation of the cab controls in the RDC.

1 – Reverser (push away from you for forward setting, pull towards you for reverse)

2 – Throttle (five notches)

3 – Train Brake (pull towards you to apply, push away to release)

4 – Speedometer in mph (55 mph: change to direct drive, 70 mph: cruising speed)

5 – Cab Light Switch

6 – Sander Button (push and hold to apply sander)

7 – Brake Cylinder Gauges

8 – Main Reservoir Gauge

9 – Bell Switch (toggle on / off, switch on in when traveling in yards and stations)

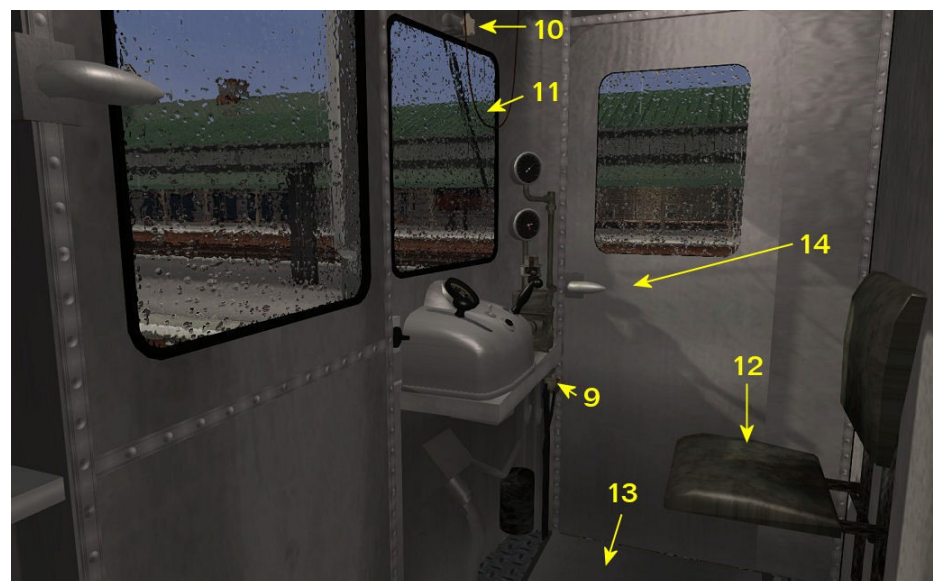
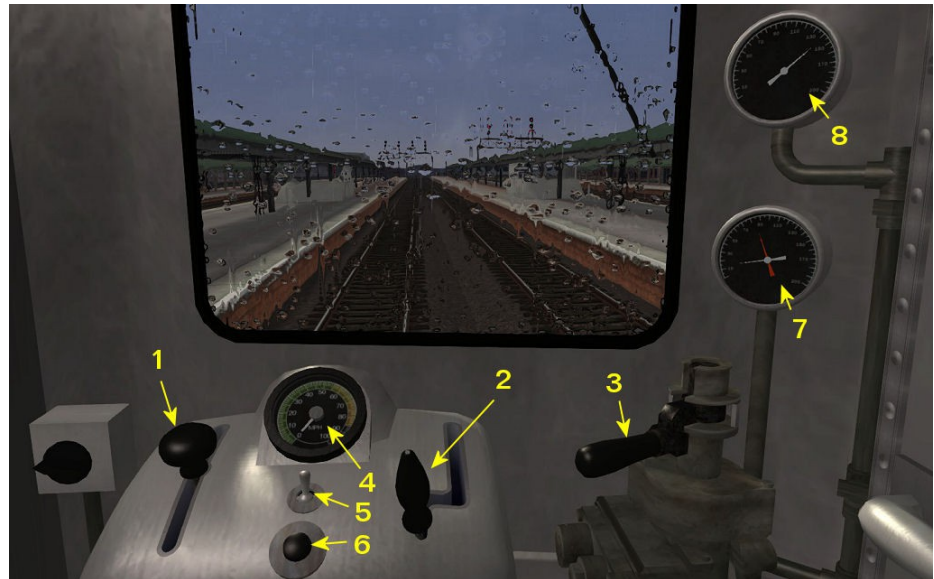
10 – Wiper Switch (toggle on off)

11 – Horn Pull (pull and hold to sound horn)

12 – Folding Seat

13 – Footplate / Steps Cover

14 – Door



## **Further Details and Instructions:**

### Brakes:

The RDC does not have an independent locomotive brake like a standard locomotive does, instead it has only the Train Brake which works the powerful disc brakes on all cars in the consist.

### Moving the RDC:

To start moving, you must (1) release the brakes, (2) put the reverser in the desired position (forward/backward), and then (3) apply the throttle. Notch up slowly to preserve the engine and transmission. Once desired speed has been reached, notch back the throttle to hold the speed. With only five notches on the throttle you may have to cycle between two notches from time to time to keep your speed somewhat constant.

### Multiple Unit Lash-Ups:

RDC's were designed with multiple unit setups in mind and several RDC's coupled together could be controlled from the head-end cab. As each car is independently powered, several railroads also operated services that split at a station along their route, with each section continuing to a different destination.

Please note that RDC's were not intended to be run coupled with other cars such as freight or trailing passenger cars. The NHRR attempted to use trailing passenger cars, but after the Budd Company learned of the practice they threatened to void the RDC's warranty if the custom wasn't stopped. The NHRR complied.

### Changing Direction:

The RDC is a bidirectional unit with two identical cabs at both its ends, changing direction is simple. To change the direction, for example at a terminus station, you must:

- (1) have come to a full stop and the Throttle off
- (2) have the Brakes applied at least at Minimal Reduction
- (3) put the Reverser to its Neutral position
- (4) switch off all other functions (headlights, bell, wiper, sander)
- (5) Now you can safely change to the cab on the other end of the car or train.
- (6) In the new cab, use all controls as you normally would to get the car moving.

Note: due to limitations in the Train Simulator engine, the scenario will still treat you as traveling in your original directionality, so that even when traveling forward from your point of view after switching to the rear cab, the game thinks you are moving backwards. Keep this in mind especially when using the "Throw Switch" or "Ask Permission to Pass Danger Signal" key commands and use their reverse variants (Shift+G, Ctrl+Tab).

### Opening Doors in the Cab

The operating doors and foot plates in the cabview are solely for entertainment and



visual purposes and do not have any actual function in the game. In other words, they are not tied into the passenger loading instruction at platforms, during which the doors on the external model will open. To complete the "pick up passengers" instruction in a scenario, press the T key like on any other passenger train in Train Simulator. Open and close the cabview doors at your own choosing.

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One or more textures on this 3D model have been created with images from CGTextures.com. These images may not be redistributed by default, please visit [www.cgtextures.com](http://www.cgtextures.com) for more information.

## 6 Credits, Support, Dovetail Games Disclaimer

The RDC was built by Bob Jones and Michael Stephan of the Virtual New Haven RR.

The following individuals were also involved in the process of building the models and helped in numerous ways, without which it would have been simply impossible to pull off this modeling project. Many thanks for your kind help!

- Phil Moberg (technical and historical advice, testing)
- Rick Grout (several sounds, many tips and tricks)
- Thomas Pearce (testing and advice)
- Andreas Czudai (testing, packaging and publishing)

Texture material from CGTextures.com was used in the creation of the RDC models.

### Support & Contact Information:

Please visit [www.golden-age-rails.com](http://www.golden-age-rails.com) for more information, or write an email to [contact@golden-age-rails.com](mailto:contact@golden-age-rails.com).

# DTG Disclaimer

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