

ALBERT MODELL

Meticulously crafted miniature models for demanding collectors



JŽ 441 / CFR 040-EC electric locomotives

Novelty 2026
HO scale

2026 novelty

JŽ 441 electric locomotive

History in Yugoslavia and the successor states

After the Second World War, Yugoslavia inherited 3,000 V DC electrified lines in its north-western regions, particularly in the republics of Slovenia and Croatia. This system was subsequently extended there, while 25 kV 50 Hz AC was adopted for the large-scale electrification of most of the remaining Yugoslav network.

In the early 1960s, Yugoslav Railways (JŽ) sought a new four-axle electric locomotive suitable for this electrification programme. The design selected was developed by the 50 Hz Traction Union, which brought together ASEA of Sweden, ELIN-Union and SGP of Austria and Sécheron of Switzerland. It was based on ASEA technology derived from the Swedish Rb family of locomotives.

The resulting JŽ series 441 was conceived as a universal Bo'Bo' electric locomotive capable of hauling both passenger and freight trains over main lines with widely varying profiles, including demanding mountain routes.



JŽ 441-405 locomotive presentation at Wien Westbahnhof (06.1968)



SJ 1002 locomotive at the Belgrade Fair

Designed for operation under 25 kV 50 Hz AC, the series subsequently became one of the most characteristic electric locomotive types of the Yugoslav railway network.

In 1966, JŽ concluded a series of agreements with the 50 Hz Traction Union and the Yugoslav electrical manufacturer Rade Končar of Zagreb. These covered the initial supply of locomotives, the participation of Yugoslav industry in the project and the licensed production of further locomotives in Yugoslavia.

The first locomotives were built with the participation of SGP in Graz and began arriving in Yugoslavia in the late 1960s. Production was progressively transferred to Yugoslav industry, with Rade Končar playing the leading role in the electrical equipment and final production. Other Yugoslav companies, including Đuro Đaković, MIN Niš, Energoinvest, Minel and Janko Gredelj, participated in the manufacture of components and assemblies.

The success of the first locomotives resulted in additional production orders and an increasingly high proportion of Yugoslav-built equipment. After the original foreign licences expired, Yugoslav manufacturers continued developing and improving the design independently. Numerous sub-series were produced, incorporating technical modifications intended to improve reliability and performance.

JŽ 441 series details

	441-000, 100, 200	441-300	441-400	441-500	441-600	441-700	441-800
Wheel arrangement	Bo'Bo'	Bo'Bo'	Bo'Bo'	Bo'Bo'	Bo'Bo'	Bo'Bo'	Bo'Bo'
Voltage	25 kV AC	25 kV AC	25 kV AC	25 kV AC	25 kV AC	25 kV AC	25 kV AC
Power	3300 kW	3300 kW	4000 kW	3300 kW	3300 kW	3300 kW	3300 kW
Maximum speed	120 km/h	120 km/h	120 km/h	120 km/h	140 km/h	140 km/h	140 km/h
Tare	78t	80t	80t	78t	78t	82t	82t
Axle load	19,5t	20t	20t	19,5t	19,5t	20,5t	20,5t
Electric braking	×	✓	✓	×	×	×	✓
Tandem drive	×	✓	✓	×	×	✓	×
Wheel rims lubrication	×	×	✓	✓	✓	✓	✓
Control type	Si-diode	Si-diode	Si-diode	Si-diode	Thyristor	Thyristor	Thyristor

After the breakup of Yugoslavia

Following the dissolution of Yugoslavia in the 1990s, the JŽ 441 fleet was divided among the railway administrations of the successor states. The locomotives subsequently appeared under several new classifications:

- * Croatia: HŽ series 1141
- * Serbia: JŽ/ŽS series 441 and modernized series 444
- * Bosnia and Herzegovina: ŽFBiH series 441 and ŽRS series 441
- * North Macedonia: MŽ series 441, alongside the related series 442

Despite their common origin, the fleets subsequently evolved differently as each railway introduced its own modernization programmes.



In Croatia, a substantial part of the HŽ 1141 fleet was progressively modernized. Depending on the sub-series and rebuilding programme, modifications included thyristor control, redesigned driving desks with electronic displays, altered headlights and roof equipment, cameras replacing conventional rear-view mirrors and numerous electrical and mechanical improvements. Some locomotives intended for passenger service were adapted for speeds of up to 160 km/h.

In Serbia, ŽTP Beograd launched a major modernization programme for the 441 fleet. Between 2004 and 2007, 30 locomotives were rebuilt and reclassified as series 444. The modernization included thyristor rectification and control, redesigned driving cabs, modified roof equipment and new headlights. Further modifications were subsequently introduced by Serbian Railways.

Bosnian locomotives followed another interesting path. In 1997, Končar and the Railways of Bosnia and Herzegovina concluded an agreement covering the overhaul and thyristor conversion of a group of locomotives. At approximately the same time, ŽFBH arranged for modernized locomotives to be leased to the Turkish State Railways (TCDD). Beginning in 1998, these locomotives entered service in Turkey as the TCDD E52500 series. They received thyristor control, modernized cabs, modified roof equipment and twin headlights. The leased locomotives were eventually returned to Bosnia and Herzegovina in 2015.

The 441 family has also spread beyond the fleets that inherited it directly from JŽ. In more recent years, several former Croatian HŽ 1141 locomotives have been sold to private railway operators elsewhere in Europe, including operators in Romania, Bulgaria and Slovakia.



**More about the history
of JŽ 441 locomotives**

TrainsDepot.org – Europe's Railway
History Database

The Romanian 040-EC locomotives – Classes 43 and 44

The Romanian 040-EC represents a separate branch of the same ASEA-derived locomotive family. While Romania's better-known six-axle 060-EA locomotives were manufactured by Electroputere Craiova under ASEA licence, the four-axle 040-EC was developed from the Yugoslav JŽ 441 and supplied as part of a major industrial cooperation agreement between Romania and Yugoslavia.

Beginning in the early 1970s, the two countries concluded agreements for the reciprocal supply of locomotives, components and subassemblies. Romanian manufacturers Electroputere Craiova and UCM Reșița participated alongside the Yugoslav railway industry.

Under this arrangement, Romania supplied Yugoslavia with 103 six-axle Co'Co' electric locomotives, which became the JŽ series 461, as well as components and subassemblies used in locomotive production. In return, 130 four-axle Bo'Bo' locomotives of the Yugoslav 441 family were supplied to CFR, where they were initially classified as 040-EC.



*Will be reproduced in miniature under the reference
Albert Modell 040005*

Deliveries took place during the 1970s and early 1980s, with the Romanian locomotives being produced as a dedicated version adapted to CFR requirements. Although closely related to the JŽ 441, they incorporated a number of visible and technical differences.

One of the most distinctive differences is the arrangement of the cab sides. On the Yugoslav version, the cab entrance is located on the right-hand side while the driver's position is on the left; on the Romanian version this arrangement is reversed, with the entrance on the left and the driver positioned on the right. Most Romanian locomotives were also fitted with single headlights of a slightly different design from those used on comparable Yugoslav locomotives. Other differences included details of the battery boxes, buffer-beam equipment and, on some locomotives, rectangular buffers.

Mechanically, the 040-EC retained the Bo'Bo' wheel arrangement, with four powered axles. With a continuous output of approximately 3'400 kW, the locomotives were shorter and lighter than CFR's six-axle 060-EA family and were particularly well suited to passenger trains and duties where the greater power and axle count of the 060-EA were unnecessary.



Manufacturing of locomotives for JŽ and CFR at the Rade Končar factory, 1973



**More about the history
of 040-EC locomotives**

TrainsDepot.org – Europe's Railway
History Database

Following the introduction of the modern CFR classification system, the locomotives became principally associated with two classes:

- Class 43 represented the standard 040-EC version, with a maximum speed of 120 km/h;
- Class 44 represented the higher-speed 040-EC1 version, capable of 160 km/h.

For several decades, these locomotives became a familiar sight throughout the Romanian electrified network, particularly on passenger services and on routes where their lower weight and four-axle configuration offered advantages over the larger six-axle electric locomotives.

Following the restructuring of the Romanian railway sector and the substantial decline in rail traffic during the 1990s and 2000s, many Class 43 and 44 locomotives were withdrawn, stored or scrapped. Others subsequently found new careers with private Romanian railway operators.

A number of locomotives were also rebuilt or modernized over the years, including examples associated with the Class 46 designation.

	040-EC / Class 43	040-EC1 / Class 44	Class 46
Wheel arrangement	Bo'Bo'	Bo'Bo'	Bo'Bo'
Voltage	25 kV AC	25 kV AC	25 kV AC
Power	3400 kW	3400 kW	3840 - 4400 kW
Max. speed	120 km/h	160 km/h	160 km/h
Tare weight	76t	76t	76t
Axle load	19t	19t	19t

Class 48.3 modernization

A new chapter in the history of the Romanian 040-EC family began with CFR Călători's large-scale rolling-stock modernization programme financed through Romania's National Recovery and Resilience Plan (PNRR).

Under the programme, 17 former 3,400 kW Class 43/44 locomotives were comprehensively rebuilt by SCRL Braşov and delivered as the new Class 48.3.



RO-SNTFC Class 48.3 modernized version

Unlike earlier overhauls, the Class 48.3 programme represents a fundamental technical reconstruction. The locomotives received modern asynchronous traction motors, new electrical and electronic traction equipment, computerized control systems, ETCS Level 2 equipment and extensively redesigned driving cabs.

The programme therefore gives a new operational life to locomotives whose basic design can ultimately be traced back to the ASEA-derived Yugoslav 441 family of the 1960s—more than half a century after the first members of the family entered service.

Photo: Stefan Puscasu



Will be reproduced in miniature under the reference
Albert Model 040006

Photo: Stefan Puscasu



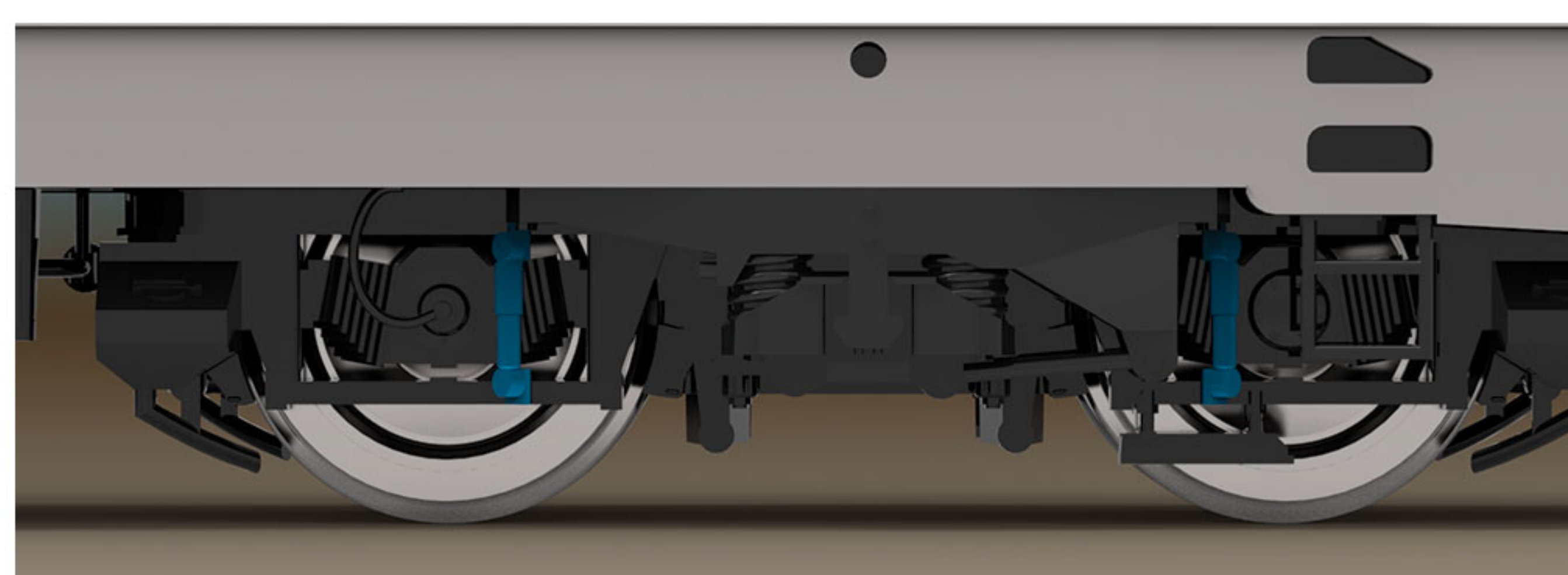
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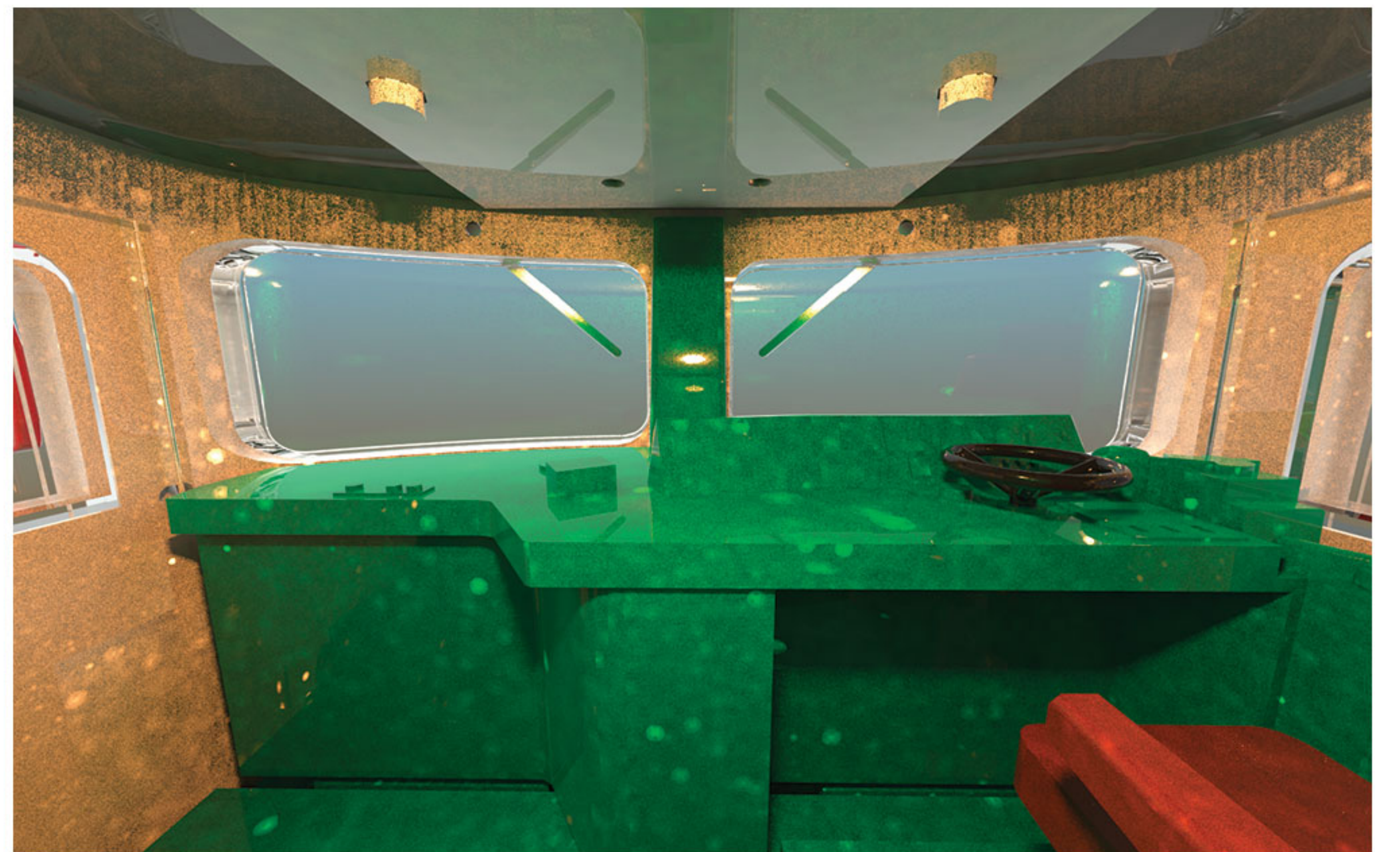
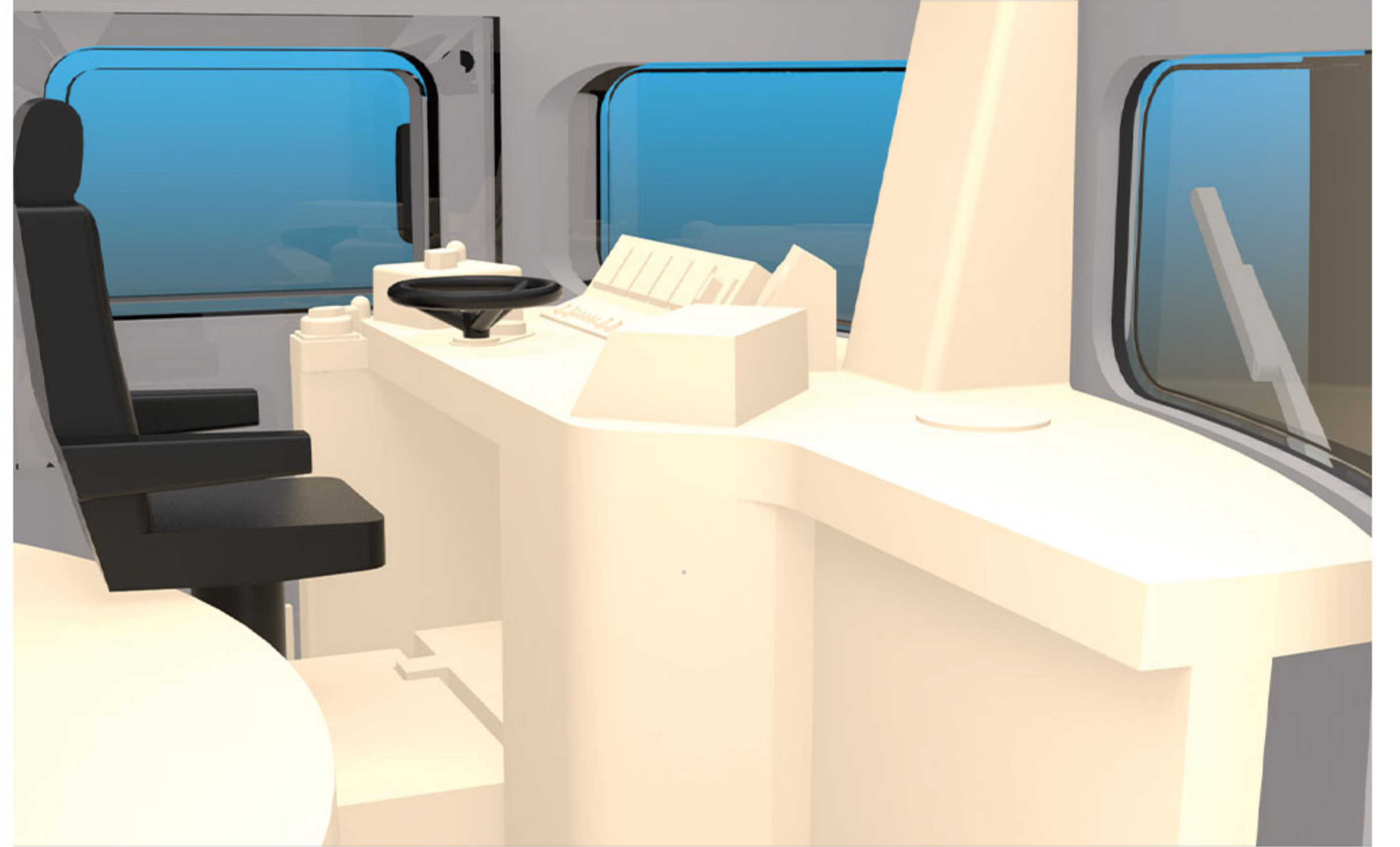
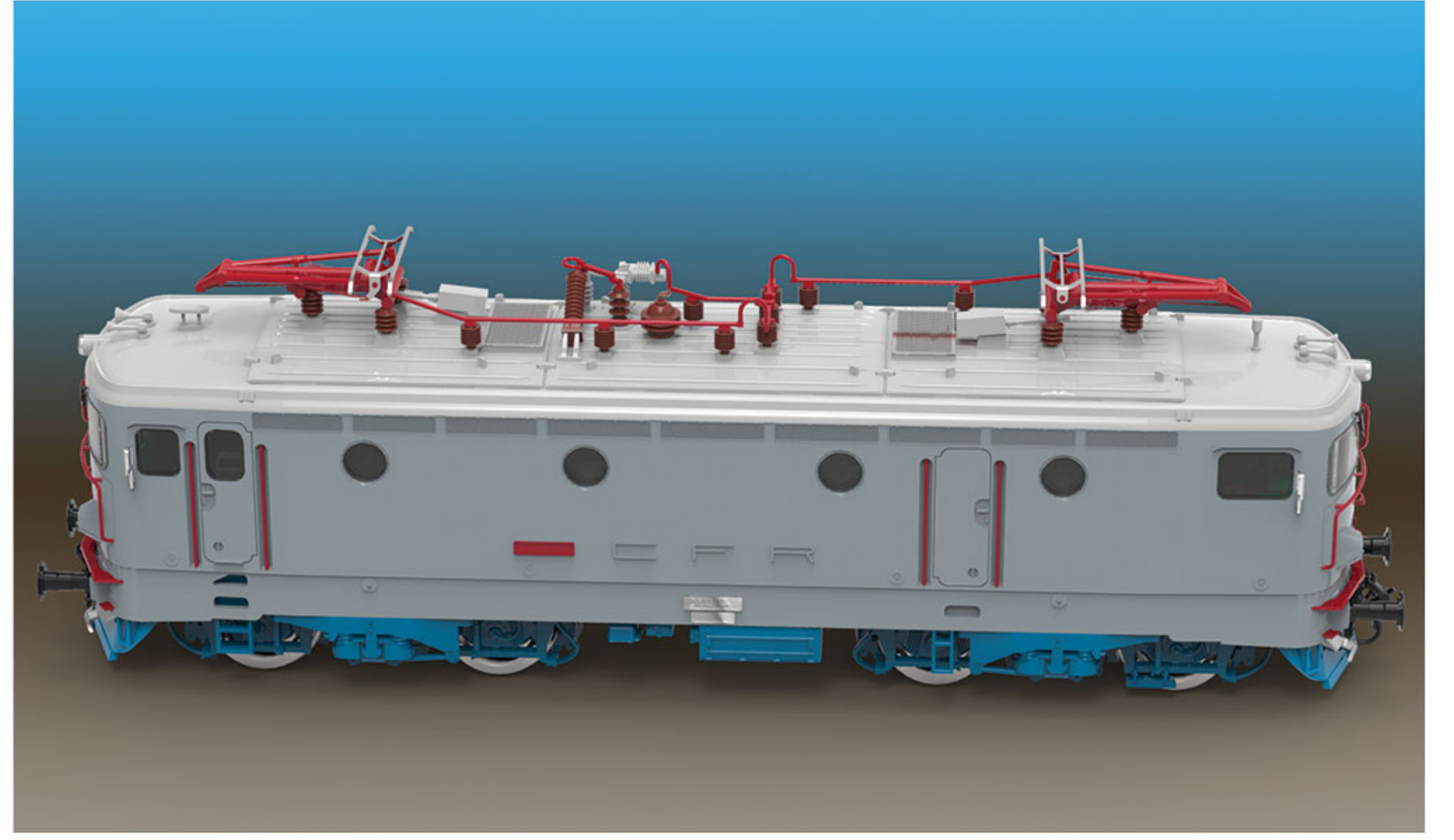
Miniature versus reality

Albert Modell has made every effort to reproduce the prototype locomotives as faithfully as possible. The models are primarily made of high-quality plastic, complemented by finely etched brass details. Particular attention has been paid to the accurately reproduced roof equipment and other fine details characteristic of the prototype.

The locomotives are powered by a high-quality 5-pole motor, ensuring smooth and reliable operation. Factory-fitted DCC Sound versions will also be available, offering a wide range of digital functions and realistic sound effects.

Depending on the version, additional digitally controlled lighting functions include separately switchable driver's cab and engine-room lighting, as well as various configurations of the main headlights and marker lights.





Versions



JŽ 441-000, 1967



JŽ 441-400, 1967



JŽ 441, ep. IV



JŽ 441-700, ep. IV



HŽ 1141, ep. V



HŽ 1141-370+, ep. V



HŽ 1141-370+, ep. VI



HŽ 1141, ep. VI



TCDD E52500/ŽFBH 441, ep. V



TCDD E52500/ŽFBH 441-900, ep. VI



THM 430



HŽ 1141-300+ ep. V/VI



GFR 430 (ex JŽ 441)



HŽ 1141-380+, ep. VI



CFR 43/44



CFR 44 original



CFR 43



CFR 43 CFR MARFA



CFR 44/46



CFR Calatori



Servtrans, ASTRA, GP Rail cargo



CFR, modernized in Končar



Constantin Grup

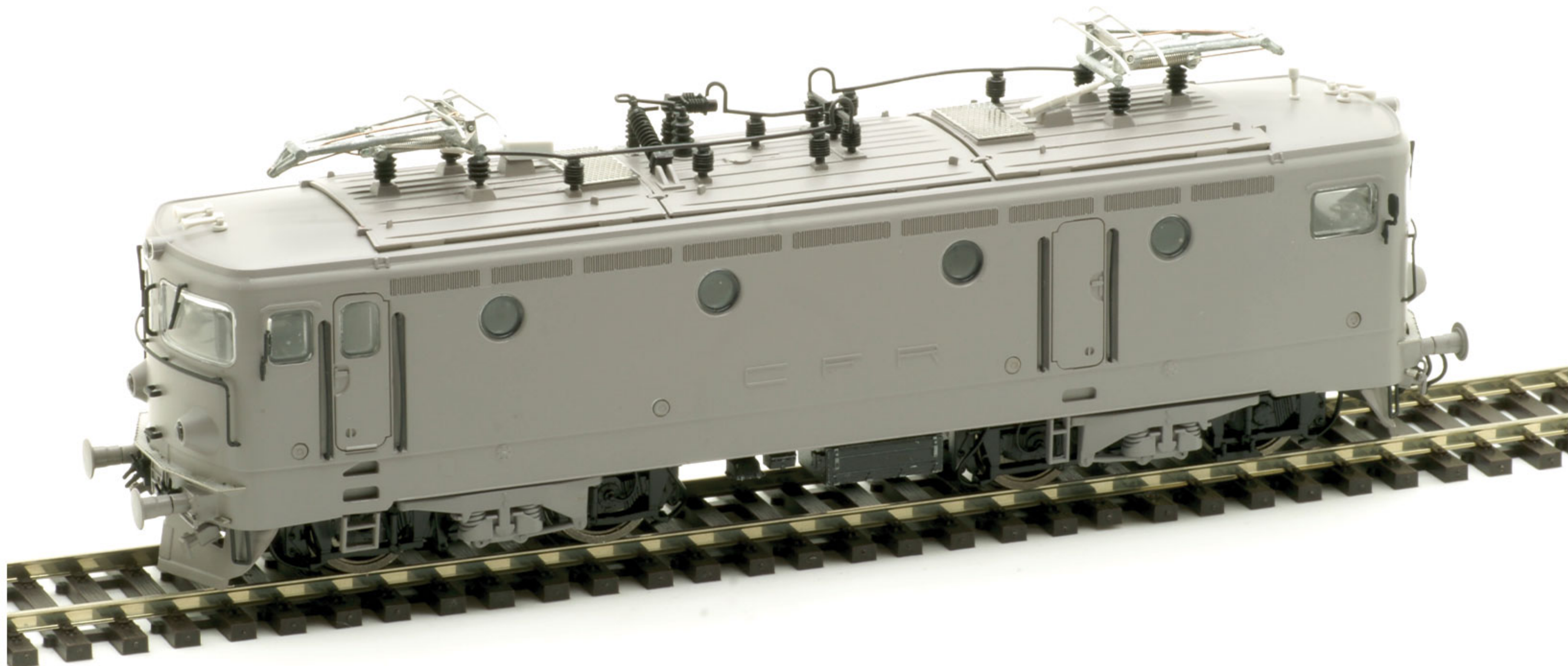


CRW

Prototype 1



Prototype 2



JZ - 441 electric locomotive



Yugoslavia

Era: IV

Registration number : 715

Albert Modell 040001

2-rail



HO (1:87) | 178 mm | 358 mm | 5-pole motor | DCC PLUX22 interface (NEM 658)
Flywheel drive | Triple headlights at the front

HZ - 1141 electric locomotive



Croatia

Era: V

Registration number : 022

Albert Modell 040002

2-rail



HO (1:87) | 178 mm | 358 mm | 5-pole motor | DCC PLUX22 interface (NEM 658)
Flywheel drive | Triple headlights at the front

EXCLUSIVITY FOR
TRAINS-ADDICTED



RO-UTZ - 040-EC electric locomotive



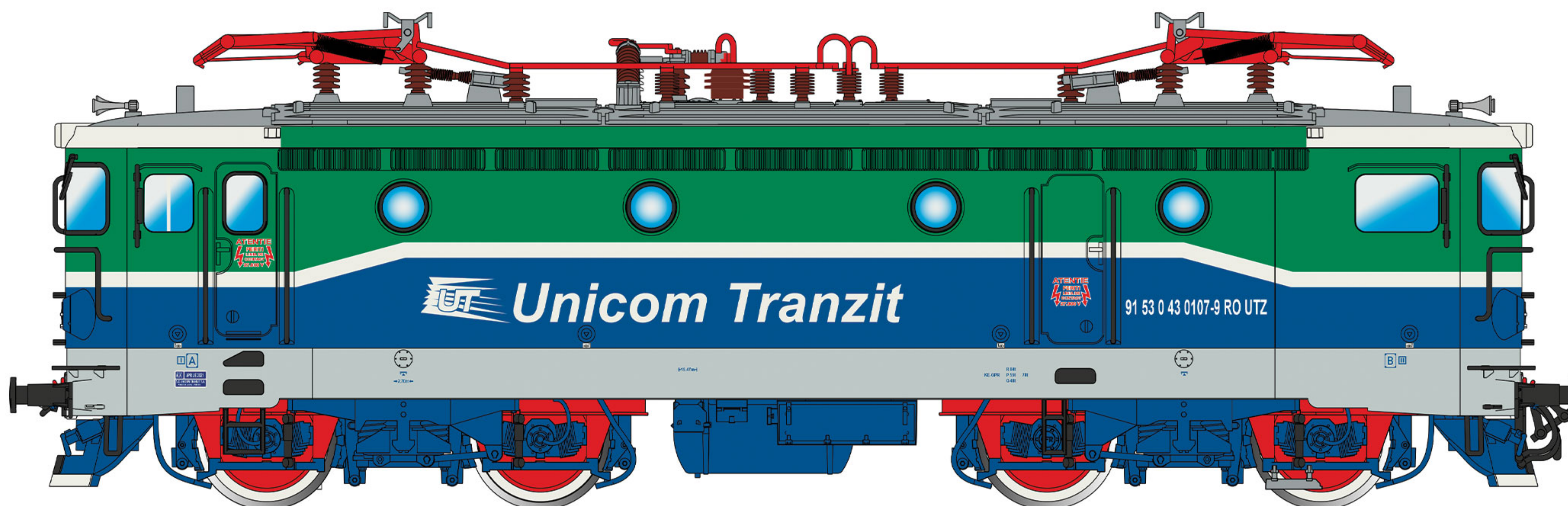
Romania

Era: VI

Registration number : 91530430107-9

Albert Modell 040003

2-rail



HO (1:87) | 178 mm | 358 mm | 5-pole motor | DCC PLUX22 interface (NEM 658)
Flywheel drive | Triple headlights at the front

EXCLUSIVITY FOR
TRAINS-ADDICTED



CFR - 040-EC electric locomotive



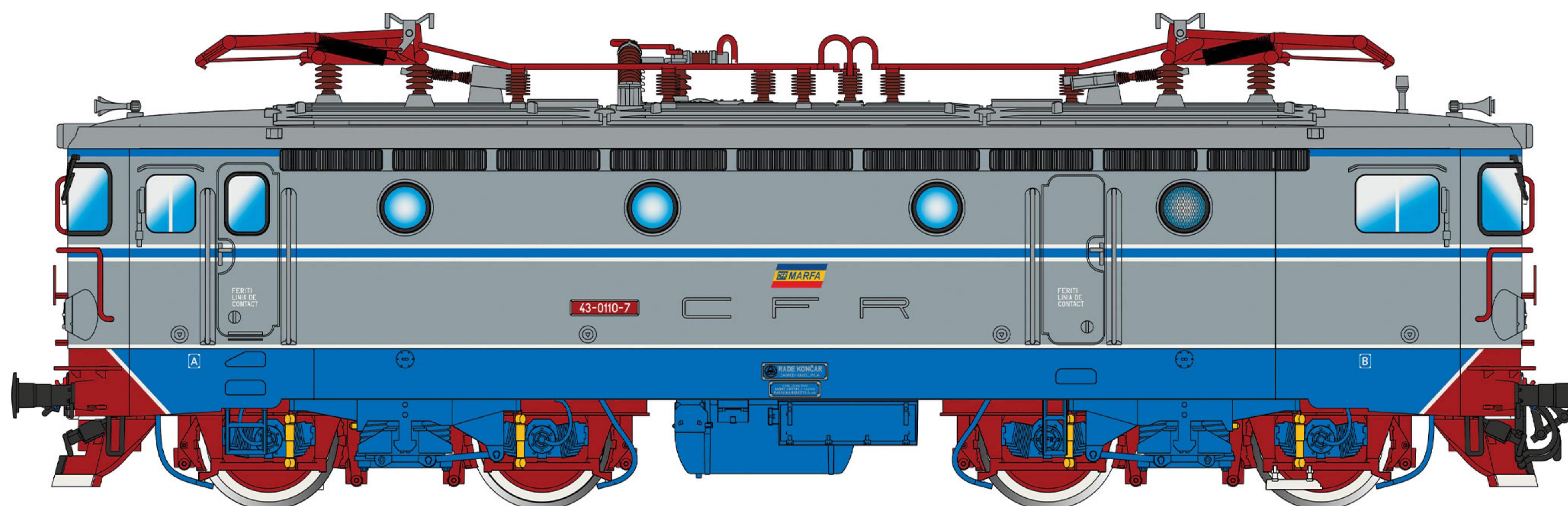
Romania

Era: V

Registration number : 43 0110-7

Albert Modell 040004

2-rail



HO (1:87) | 178 mm | 358 mm | 5-pole motor | DCC PLUX22 interface (NEM 658)
Flywheel drive | Triple headlights at the front

EXCLUSIVITY FOR
TRAINS-ADDICTED



CFR - 040-EC electric locomotive



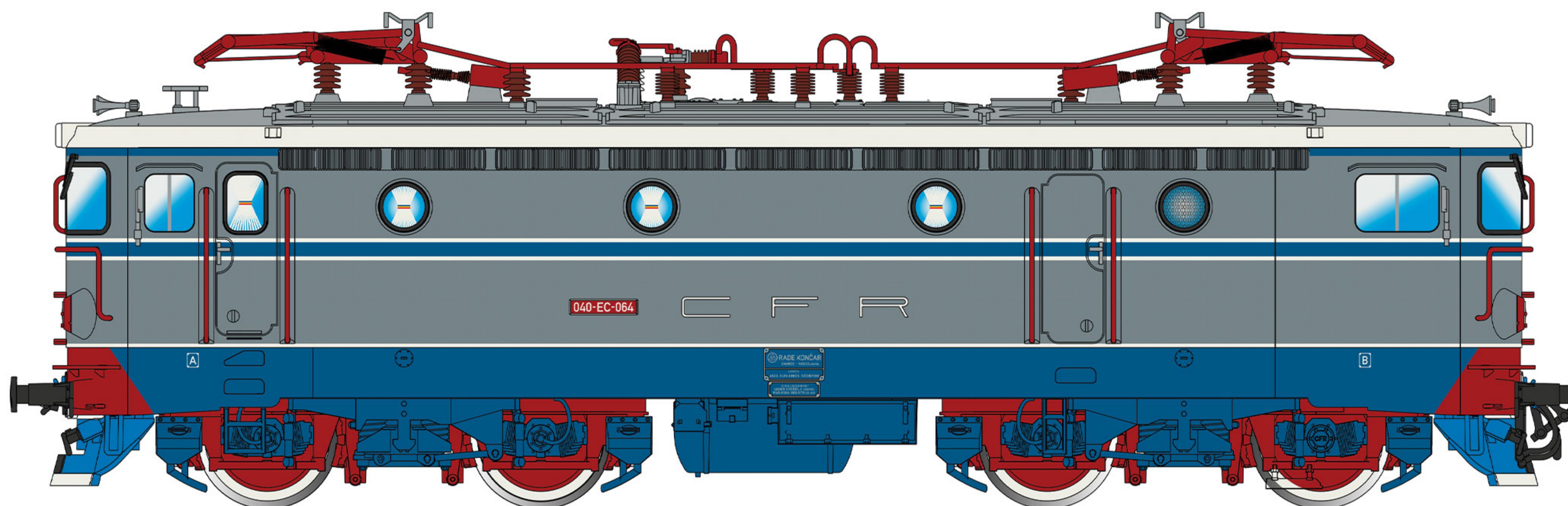
Romania

Era: IV

Registration number : 064

Albert Modell 040005

2-rail



HO (1:87) | 178 mm | 358 mm | 5-pole motor | DCC PLUX22 PLUX22 interface (NEM 658)
Flywheel drive | Triple headlights at the front

EXCLUSIVITY FOR
TRAINS-ADDICTED



CFR - 040-EC electric locomotive



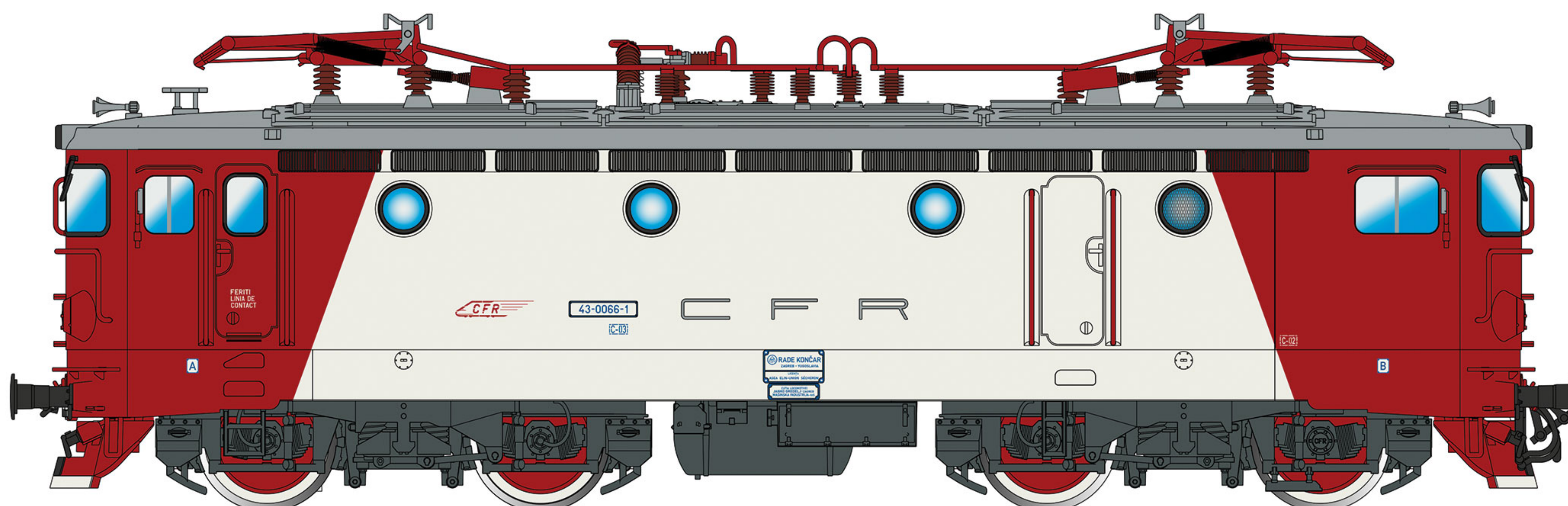
Romania

Era: VI

Registration number : 066

Albert Modell 040006

2-rail



HO (1:87) | 178 mm | 358 mm | 5-pole motor | DCC PLUX22 PLUX22 interface (NEM 658)
Flywheel drive | Triple headlights at the front

TCDD – E52 electric locomotive



Turkey

Era: IV

Registration number : 513

Albert Modell 040007

2-rail



HO (1:87) | 178 mm | 358 mm | 5-pole motor | DCC PLUX22 interface (NEM 658)
Flywheel drive | Triple headlights at the front

ALBERT MODELL

About us

The history of our company

Established in 2014, Albert-Modell has swiftly emerged as a known name in the world of model railway manufacturing. Our international presence, which commenced in 2017, marks a significant milestone in our journey. At Albert-Modell, our primary focus rests on producing exquisitely detailed models of Eastern European freight wagons, alongside an impressive range of diesel locomotives, but our range includes more and more models from countries like Germany and Switzerland.

Our philosophy is anchored in the belief that model-making is an art that demands precision, detail, and affordability. We strive to blend these elements, offering our clients high-quality, intricately designed models at a price that respects their passion and investment in this hobby.

Our products are crafted not merely as toys, but as collectibles, with a dedication to craftsmanship.

We pride ourselves on producing models in limited quantities, ensuring that each piece we create is not just a model but an elegant representation of the original. This approach underlines our commitment to quality over quantity, making our models sought-after items for collectors and enthusiasts who value exclusivity and authenticity.



We highlight your miniatures

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