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# Technical Document

## *Technical characteristics of the vehicle part of the EVN*

### *Document History*

<i>Version</i>	<i>Date</i>	<i>Comments</i>
0.1	03/08/2023	Initial version.
0.2	03/10/2023	Following the WP consultation

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## 1. Standard numerical marking of wagons (Digit 5-8)

The relation between letter marking codes and numerical wagons marking is established in the table defined in the file below.

The up-to-date version of the file is published on the ERA website.



Standard numerical marking of wagons.

**2. Codes for the technical characteristics of hauled passenger stock (Digit 5-6)**

	6 <sup>th</sup> digit 5 <sup>th</sup> digit	0	1	2	3	4
<b>Reserved</b>	<b>0</b>	Reserved	Reserved	Reserved	Reserved	Reserved
<b>Vehicles with 1<sup>st</sup> class seats</b>	<b>1</b>	10 side-corridor compartments or equivalent open-saloon space with centre aisle	≥ 11 side-corridor compartments or equivalent open-saloon space with centre aisle	Reserved	Reserved	Two or three axles
<b>Vehicles with 2<sup>nd</sup> class seats</b>	<b>2</b>	10 side-corridor compartments or equivalent open-saloon space with centre aisle	11 side-corridor compartments or equivalent open-saloon space with centre aisle	≥ 12 side-corridor compartments or equivalent open-saloon space with centre aisle	Three axles	Two axles
<b>Vehicles with 1<sup>st</sup> or 1<sup>st</sup>/2<sup>nd</sup> class seats</b>	<b>3</b>	10 side-corridor compartments or equivalent open-saloon space with centre aisle	11 side-corridor compartments or equivalent open-saloon space with centre aisle	≥ 12 side-corridor compartments or equivalent open-saloon space with centre aisle	Reserved	Two or three axles
<b>1<sup>st</sup> or 1<sup>st</sup>/2<sup>nd</sup> class couchette cars</b>	<b>4</b>	10 1 <sup>st</sup> /2 <sup>nd</sup> class compartments	Reserved	Reserved	Reserved	≤ 9 1 <sup>st</sup> /2 <sup>nd</sup> class compartments
<b>2<sup>nd</sup> class couchette cars</b>	<b>5</b>	10 compartments	11 compartments	≥ 12 compartments	Reserved	Reserved
<b>Reserved</b>	<b>6</b>	Reserved	Reserved	Reserved	Reserved	Reserved
<b>Sleeping cars</b>	<b>7</b>	10 compartments	11 compartments	12 compartments	Reserved	Reserved
<b>Vehicles of special design and vans</b>	<b>8</b>	Driving coach with seats, all classes, with or without luggage compartment, with driving cab for reversible working	Vehicles with 1 <sup>st</sup> or 1 <sup>st</sup> /2 <sup>nd</sup> class seats with luggage or mail compartment	Vehicles with 2 <sup>nd</sup> class seats with luggage or mail compartment	Reserved	Vehicles with seats, all classes with specially-fitted areas, e.g. children's play area
	<b>9</b>	Mail vans	Luggage vans with mail compartment	Luggage vans	Luggage vans and two or three-axle 2 <sup>nd</sup> class vehicles with seats, with luggage or mail compartment	Side-corridor luggage vans, with or without compartment under customs seal

	6 <sup>th</sup> digit 5 <sup>th</sup> digit	5	6	7	8	9
<b>Reserved</b>	<b>0</b>	Reserved	Reserved	Reserved	Reserved	Reserved
<b>Vehicles with 1<sup>st</sup> class seats</b>	<b>1</b>	Reserved	Double-deck coaches	≥ 7 side-corridor compartments or equivalent open-saloon space with centre aisle	8 side-corridor compartments or equivalent open-saloon space with centre aisle	9 side-corridor compartments or equivalent open-saloon space with centre aisle
<b>Vehicles with 2<sup>nd</sup> class seats</b>	<b>2</b>	Only for OSJD, double-deck coaches	Double-deck coaches	Reserved	≥ 8 side-corridor compartments or equivalent open-saloon space with centre aisle	9 side-corridor compartments or equivalent open-saloon space with centre aisle
<b>Vehicles with 1<sup>st</sup> or 1<sup>st</sup>/2<sup>nd</sup> class seats</b>	<b>3</b>	Reserved	Double-deck coaches	Reserved	≥ 8 side-corridor compartments or equivalent open-saloon space with centre aisle	9 side-corridor compartments or equivalent open-saloon space with centre aisle
<b>1<sup>st</sup> or 1<sup>st</sup>/2<sup>nd</sup> class couchette cars</b>	<b>4</b>	Reserved	Reserved	Reserved	Reserved	≤ 9 1 <sup>st</sup> class compartments
<b>2<sup>nd</sup> class couchette cars</b>	<b>5</b>	Reserved	Reserved	Reserved	Reserved	≤ 9 compartments
<b>Reserved</b>	<b>6</b>	Reserved	Reserved	Reserved	Reserved	Reserved
<b>Sleeping cars</b>	<b>7</b>	> 12 compartments	Reserved	Reserved	Reserved	Reserved
<b>Vehicles of special design and vans</b>	<b>8</b>	Coaches with seats and couchette cars, all classes, with bar or buffet area	Double-deck driving coach with seats, all classes, with or without luggage compartment, with driving cab for reversible working	Dining cars or coaches with bar or buffet area, with luggage compartment	Dining cars	Other special coaches (conference, disco, bar, cinema, video, ambulance coaches)
	<b>9</b>	Two or three-axle luggage vans with mail compartment	Reserved	Two or three-axle car-carrying wagons	Car-carrying wagons	Service vehicles

Note: Fractions of a compartment are not considered. The equivalent accommodation in open saloon cars with centre aisle is obtained by dividing the number of available seats by 6, 8 or 10 depending on the construction of the vehicle.

## 3. Codes for the general characteristics of hauled passenger stock (digits 7-8)

Energy supply	8th digit	0	1	2	3	4	5	6	7	8	9
Maximum speed	7th digit										
< 120 km/h	0	All tensions *	Reserved	3000 V~ + 3000 V=	1000 V~ *	Reserved	1500 V~	Other tensions than 1000 V, 1500 V, 3000 V	1500 V~ + 1500 V=	3000 V=	Reserved
	1	All tensions * + Steam <sup>1</sup>	1000 V~ + Steam <sup>1</sup>	1000 V~ + Steam <sup>1</sup>	1000 V~ + Steam <sup>1</sup>	1000 V~ + Steam <sup>1</sup>	1000 V~ + Steam <sup>1</sup>	Reserved	1500 V~ + 1500 V= + Steam <sup>1</sup>	3000 V= + Steam <sup>1</sup>	3000 V= + Steam <sup>1</sup>
	2	Steam <sup>1</sup>	Steam <sup>1</sup>	3000 V~ + 3000 V= + Steam <sup>1</sup>	Steam <sup>1</sup>	3000 V~ + 3000 V= + Steam <sup>1</sup>	Steam <sup>1</sup>	3000 V~ + 3000 V= 1500 V~ + Steam <sup>1</sup>	1500 V~ + Steam <sup>1</sup>	1500 V~ + Steam <sup>1</sup>	A <sup>1</sup>
121 to 140 km/h	3	All tensions	Reserved	1000 V~ + 3000 V=	1000 V~ * <sub>1</sub>	1000 V~ * <sub>1</sub>	1000 V~	1000 V~ + 1500 V~ + 1500 V=	1500 V~ + 1500 V=	3000 V=	3000 V=
	4	All tensions * + Steam <sup>1</sup>	All tensions + Steam <sup>1</sup>	All tensions + Steam <sup>1</sup>	1000 V~ * <sub>1</sub> + Steam <sup>1</sup>	1500 V~ + 1500 V=	1000 V~ + Steam <sup>1</sup>	3000 V~ + 3000 V=	1500 V~ + 1500 V= + Steam <sup>1</sup>	3000 V= + Steam <sup>1</sup>	Reserved
	5	All tensions * + Steam <sup>1</sup>	All tensions + Steam <sup>1</sup>	All tensions + Steam <sup>1</sup>	1000 V~ + Steam <sup>1</sup>	Reserved	1500 V~ + Steam <sup>1</sup>	Other tensions than 1000 V, 1500 V, 3000 V	1500 V~ + 1500 V= + Steam <sup>1</sup>	Reserved	Reserved
	6	Steam <sup>1</sup>	Reserved	3000 V~ + 3000 V=	Reserved	3000 V~ + 3000 V=	Reserved	Steam <sup>1</sup>	Reserved	Reserved	A <sup>1</sup>
141 to 160 km/h	7	All tensions *	All tensions	1500 V~ <sup>1</sup> + 3000 V= <sup>1</sup> All tensions <sup>2</sup>	1000 V~ *	1500 V~ + 1500 V=	1000 V~	1500 V~	1500 V~ + 1500 V=	3000 V=	3000 V=
	8	All tensions * + Steam <sup>1</sup>	All tensions + Steam <sup>1</sup>	3000 V~ + 3000 V=	Reserved	All tensions * + Steam <sup>1</sup>	1000 V~ + Steam <sup>1</sup>	3000 V~ + 3000 V=	Other tensions than 1000 V, 1500 V, 3000 V	All tensions * + Steam <sup>1</sup>	A <sup>1</sup> G <sup>2</sup>
> 160 km/h	9	All tensions * <sub>2</sub>	All tensions	All tensions + Steam <sup>1</sup>	1000 V~ + 1500 V~	1000 V~	1000 V~	Reserved	1500 V~ + 1500 V=	3000 V=	A <sup>1</sup> G <sup>2</sup>

## Notes:

- 1 Only for domestic traffic vehicles
- 2 Only for vehicles able to international traffic
- All tensions Single phase alternating current 1000 V 51 to 15 Hz, single phase alternating current 1500 V 50 Hz, direct current 1500 V, direct current 3000 V. Can include single phase alternating current 3000 V 50 Hz
- \* For certain vehicles with 1000V single phase alternating current, only one frequency, either 16 2/3 or 50 Hz, is permitted
- A Autonomous heating, without train bus electricity supply line
- G Vehicles with train bus electricity supply line for all voltages, but requiring a generator van to supply air-conditioning
- Steam Steam heating only. If tensions are written, the code is also available for vehicles without steam heating.

**4. Codes for the technical characteristics of special vehicles (Digit 5 to 8)**

For special vehicles the Digit 5 is always “9”

**4.1. Digit 6 - Authorised speed for special vehicles**

Classification			Self-propelled travelling speed		
			≥ 100 km/h	< 100 km/h	0 km/h
Can be put into a train	V ≥ 100 km/h	Self-propelled	1	2	
		Non self-propelled			3
	V < 100 km/h and/or restrictions <sup>a</sup>	Self-propelled		4	
		Non self-propelled			5
Cannot be put into a train		Self-propelled		6	
		Non self-propelled			7
Self-propelled rail/road vehicle than can be put into a train <sup>b</sup>				8	
Self-propelled rail/road vehicle than cannot be put into a train <sup>b</sup>				9	
Non self-propelled rail/road vehicle <sup>b</sup>					0

- a. By restriction is meant a special position in a train (e.g. at the rear), an obligatory protection wagon, etc.
- b. Special conditions concerning inclusion in a train must be complied with.



**4.2. Digits 7 and 8 - Type and sub-type of special vehicle (digits 7-8)**

7th digit	8th digit	Vehicles / machines
<b>1</b> Infrastructure and superstructure	<b>1</b>	Track laying and renewal train
	<b>2</b>	Switches and crossing laying equipment
	<b>3</b>	Track rehabilitation train
	<b>4</b>	Ballast cleaning machine
	<b>5</b>	Earthworks machine
	<b>6</b>	
	<b>7</b>	
	<b>8</b>	
	<b>9</b>	Rail-mounted crane (excl. re-railing)
	<b>0</b>	Other or general
<b>2</b> Track	<b>1</b>	High-capacity plain track tamping machine
	<b>2</b>	Other plain track tamping machines
	<b>3</b>	Tamping machine with stabilisation
	<b>4</b>	Tamping machine for switches and crossings
	<b>5</b>	Ballast plough
	<b>6</b>	Stabilisation machine
	<b>7</b>	Grinding and welding machine
	<b>8</b>	Multi-purpose machine
	<b>9</b>	Track inspection car
	<b>0</b>	Other
<b>3</b> Overhead line	<b>1</b>	Multi-purpose machine
	<b>2</b>	Rolling and unrolling machine
	<b>3</b>	Mast installation machine
	<b>4</b>	Drum carrier machine
	<b>5</b>	Overhead line tensioning machine
	<b>6</b>	Machine with elevating work platform and machine with scaffold

7th digit	8th digit	Vehicles / machines
	7	Cleaning train
	8	Greasing train
	9	Overhead line inspection car
	0	Other
4 Structures	1	Deck laying machine
	2	Bridge inspection platform
	3	Tunnel inspection platform
	4	Gas purification machine
	5	Ventilation machine
	6	Machine with elevating work platform or with scaffold
	7	Tunnel lighting machine
	8	
	9	
	0	Other
5 Loading, unloading and various transport	1	Rail loading/unloading and transport machine
	2	Loading/unloading and transport machine for ballast, gravel, etc.
	3	
	4	
	5	Sleeper loading/unloading and transport machine
	6	
	7	
	8	Loading/unloading and transport machine for switchgear, etc.
	9	Loading/unloading and transport machine for other materials
	0	Other
6 Measuring	1	Earthworks recording car
	2	Track recording car
	3	Overhead line recording car

7th digit	8th digit	Vehicles / machines
	4	Gauge recording car
	5	Signalling recording car
	6	Telecommunications recording car
	7	
	8	
	9	
	0	Other
7 Emergency	1	Emergency crane
	2	Emergency haulage car
	3	Emergency tunnel train
	4	Emergency car
	5	Fire car
	6	Sanitary vehicle
	7	Equipment car
	8	
	9	
	0	Other
8 Traction, transport, energy, etc.	1	Tractive units
	2	
	3	Transport car (excl. 59)
	4	Power car
	5	Track car / powered car
	6	
	7	Concreting train
	8	
	9	
	0	Other
9	1	Self-propelled snow plough

7th digit	8th digit	Vehicles / machines
Environment	2	Hauled snow plough
	3	Snow broom
	4	De-icing machine
	5	Weed-killing machine
	6	Rail cleaning machine
	7	
	8	
	9	
	0	Other
0 Rail/road	1	Category 1 rail/road machine
	2	
	3	Category 2 rail/road machine
	4	
	5	Category 3 rail/road machine
	6	
	7	Category 4 rail/road machine
	8	
	9	
	0	Other