



**ŽELEZNICE SLOVENSKEJ REPUBLIKY,  
BRATISLAVA  
DIRECTORATE GENERAL, DEPARTMENT OF EXPERTISE  
Klemensova 8, 813 61 Bratislava 1**

**CAPABILITY OF MOTIVE POWER UNITS  
ON THE 1435 mm AND 1520 mm GAUGE  
RAILWAY INFRASTRUCTURE OF ŽSR**

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Tel.  
02/2029 7765

Fax  
02/2029 7118

E-mail  
gro420@zsr.sk

Bank account  
2647000078/1100

CIN  
0031364501

ŽSR is incorporated in the Commercial Register of District Court Bratislava I, Section Po, Insert no. 312/B

## CAPABILITY CONDITIONS OF MOTIVE POWER UNITS

1. To determine a capability of motive power units on individual railway lines managed by ŽSR in terms of loading aspect their vertical and lateral effects on railway superstructure is crucial. Motive power units are classified to groups of lateral effects and to loading categories pursuant to STN EN 15 528 and UIC Leaflet 700.

In terms of construction gauge motive power units shall comply with rolling stock gauges pursuant to UIC Leaflets 505-1 and 506, OSJD Leaflet 500 and STN 28 0312.

2. Motive power units in terms of lateral effects on railway superstructure are classified to the groups of lateral effects according to its maximum lateral force, with which the railway vehicle effects on railway superstructure in small radius curve, determined by following the technical-running tests pursuant to UIC Leaflet 518 by following table.

Table A – Determination of group of lateral effects of motive power unit by lateral effects on railway superstructure

Lateral effects group	Maximum lateral force (kN)
1	$Y < 50$
2	$50 < Y < 60$
3	$Y > 60$

3. Pursuant to STN EN 15 528 and UIC Leaflet 700 and Commission Decision No 2004/446/EC the railway track shall be classified into one of the loading categories, if on relevant track can be operated unlimited amount of vehicles with loading parameters under template scheme pursuant to the following table.

Table B – Division of loading categories

Number load category	Maximum load on 1m track	Maximum axle load (t)				
		A 16	B 18	C 20	D 22,5	E 25
1	5.0 t/k	A	B1			
2	6.4 t/m		B2	C2	D2	
3	7.2 t/m			C3	D3	
4	8.0 t/m			C4	D4	E4
5	8.8 t/m					E5
6	10.0 t/m					

Track classification into loading categories pursuant to STN EN 15 528 and UIC Leaflet 700 is conducted by Department of Railway tracks and Structures of ŽSR Directorate General. Capability of tracks by railway vehicles with permissible loading category is provided in ŽSR Regulation Z 6 – Capability of tracks managed by ŽSR.

Motive power unit into can be operated on railway line classified into relevant loading category, both of his loading parameters e.g. maximum axle load and maximum load on 1m less or equal to values of loading parameters presented in Table B.

Maximum deflection moments and shifting (shear) forces induced by motive power unit of specific design on individual support of any span cannot be larger than deflection moments and shifting (shear) forces induced on given support by modelled load pursuant to STN EN 15 528 and Annex A of UIC Leaflet 700 for individual load categories.

For track gauge 1520 mm (broad-gauge track) not classified according to UIC Leaflet 700, the following limits of loading parameters indicated in Table C shall apply:

Table C – Maximum loading parameters for track gauge 1520 mm

Maximum permissible axle load	24,5 t
Maximum permissible load on 1m track	9,0 t/m

4. The classification of motive power units into lateral effects groups and loading categories and conditions for its classification are provided in ŽSR Regulation SR 1013.
5. Essential data for capability of motive power units on respective track sections are provided Track condition tables (Table 4).

#### **MOTIVE POWER UNITS CLASSIFICATION IN TERMS OF THEIR EFFECTS**

6. Motive power unit classification by its effects on track is conducted by Department of Expertise of ŽSR Directorate General on written request by the RU.
7. The RU shall submit the data regarding the relevant series of motive power unit for purpose of classification in the extent as follows:
  - Motive power unit series
  - Vehicle type drawing containing the following dimensions:
    - Vehicle length over buffers (for vehicles with central coupler distance between vertical axis of coupling part of central coupler) in mm.
    - Distance from front of buffer (coupling part centre line) to centre line of ending pair of wheels in mm.
    - Distance between the pair of wheels of centre line in mm.
  - Total weight of fully occupied vehicle (for diesel motor vehicles including the considered weight of passengers and luggage) in tones.
  - Maximum loading per axle in tones.
  - For vehicles with unequal weight on axles, weight fall on specific single axles.
  - Maximum lateral force by which vehicle effects on railway superstructure in small radius curve, determined by running and technical tests pursuant to UIC Leaflet 518 in kN.

#### **EXTRAORDINARY CAPABILITY OF MOTIVE POWER UNITS**

8. In necessary and justified cases exceptional capability of motive power, which does not comply with track load limits classified to relevant loading category unit can be allowed.
9. Exceptional capability of motive power unit and its conditions on specific track section shall be approved by Department of Railway tracks and Structures of ŽSR Directorate General on written request by the RU.

**10.** Approved exceptional capability of motive power unit and its conditions on specific track section are provided in ŽSR Regulation Z 6 - Tracks condition tables (Table 4).