

Proposed amendment to Appendix 9 to the GCU

Record of amendments

Amended by	Date	Paragraph	Amendment
Francesco Garrisi	12/01/2021	Codes 2.5, 2.5.2.1 (Annexes 1 and 5)	Filing, presentation
Francesco Garrisi	22/03/2022	Codes 2.5, 2.5.2.1 (Annexes 1 and 5)	Amendment of the proposal
TTI WG decision	22/03/2022	Codes 2.5, 2.5.2.1 (Annexes 1 and 5)	Updated at the meeting, see minutes of TTI WG meeting of March 2022
WU SG decision	16/05/2022	Codes 2.5, 2.5.2.1 (Annexes 1 and 5)	See minutes of TTI WG meeting of May 2022
GCU JC decision	09/06/2022	Codes 2.5, 2.5.2.1 (Annexes 1 and 5)	Approved

Title:	New drawing for the correct assembly of tare springs and load springs in the suspension systems of Y 25 bogies or derived systems
Proposed amendment made by RUs/keepers/others:	MERCITALIA RAIL/AFWP Appendix 9 subgroup
Proposed amendment to:	<input checked="" type="checkbox"/> Appendix 9 <input type="checkbox"/> Appendix 11
Proposer:	Francesco Garrisi, Mercitalia Rail
Location, date:	Florence, 07/01/2021
Concise description:	New drawing, code 2.5

1. Starting point (current situation):**1.1. Introduction**

There is no damage code for improperly assembled helical tare and vertical load springs.

1.2. Mode of operation

The suspension system of Y 25 bogies is implemented by means of two helical springs, one of which - the tare spring - is external, with the other spring - the load spring - contained inside it. Both springs must be assembled with the coils wound in the opposite direction to each other.

The external tare springs work when the wagon is empty.
The internal load springs also work when the wagon is loaded.

This requirement is already contained in Annex 2, Appendix 10 to the GCU.

GCU Appendix 9, Annex 1, code 2.5 shows a very rough drawing of the suspension system of Y 25 bogies with the springs assembled correctly, i.e. with the coils wound in the opposite direction to each other.

1.3. Anomaly/description of problem


GCU Appendix 9, Annex 1 does not contain a damage code for incorrect assembly of springs and for management of non-compliance in respect of the suspension system of Y 25 bogies. There is a need to more clearly illustrate that the two springs must be assembled with the coils wound in the opposite direction to each other.

Personnel may assign the generic code 2.5 in the event of an irregularity.


In addition, code 2.5.2.1 (Auxiliary/load spring displaced or broken on an empty wagon) stipulates that a K label be affixed with irregularity class 3, even though irregularities involving the K label are generally assigned as irregularity class 4.





1.4. Does this concern a recognised code of practice* (e.g. DIN, EN)?

No Yes (state which): UIC leaflet 517, Appendix C

Appendices 

Appendix C - Coil springs - Standardisation



Characteristics	Unit	Dogies suitable for 20 t axle load		Dogies suitable for 22.5 t axle load	
		Outer spring	Inner spring	Outer spring	Inner spring
Wire diameter	mm	d ₁ = 30	d ₂ = 24	d ₁ = 31	d ₂ = 24,4
Mean coil diameter	mm	D ₁ = 162	D ₂ = 90	D ₁ = 168	D ₂ = 90
Total number of coil windings		6,1	7,3	5,7	7,4
Number of useful coil windings		4,6	6	4,2	5,9
Free height	mm	H ₁ = 264	H ₂ = 284 ± 2	H ₁ = 260	H ₂ = 284 ± 2
Height under load of 8,8 kN	mm	242 ⁺¹ ₋₃		242 ⁺¹ ₋₃	
Flexibility	mm/kN	2,41	1,82	1,97	1,21
Direction of spiral:		right 	left 	left 	right 

12 517
OR

* "Code of practice: a written set of rules that, when correctly applied, can be used to control one or more specific hazards."
(Source: Regulation EC 352/2009, Article 3)

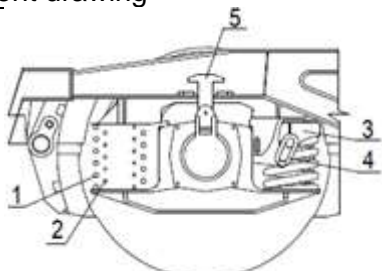
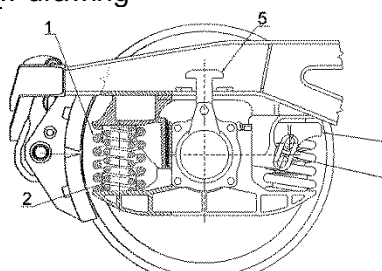
"Technical provisions laid down in writing or conveyed verbally and pertaining to procedures, equipment and modes of operation which are generally agreed by the populations concerned (specialists, users, consumer and public authorities) to be suitable for achieving the objective prescribed by law, and which have either proven their worth in practice or, it is generally agreed, are likely to within a reasonable period of time" (translation/source: BMJ Handbuch der Rechtsförmlichkeit – German Ministry of Justice)

2. Target situation

2.1. Elimination of anomaly/problem (goal)

There is a need to add a drawing in Appendix 9, Annex 1, code 2.5 that more clearly shows that the two springs should be assembled with the coils wound in the opposite direction to each other.

The irregularity class for code 2.5.2.1 should be changed to 4.

Current drawing	New drawing
	

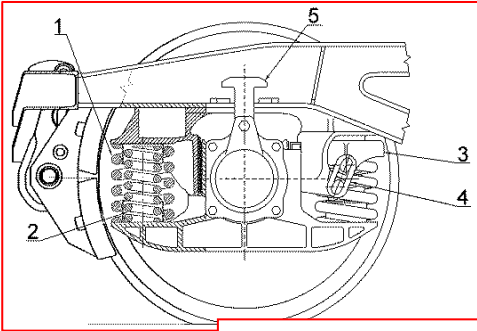
3. Amendments/additional texts (relate only to proposed amendments to GCU Appendix 9):

Colour codes for changes:

Black: currently applicable text; provides information and remains unchanged

Red: New text

Blue (may be crossed out): Text to be deleted

Component	Code no.	Irregularities/Criteria/Notes	Action to be taken	Irregularity class
Suspension system of Y 25 bogies or derived systems	2.5	 <p>1 Tare spring* 2 Load spring* 3 Spring cap 4 Damper ring 5 Lifting T</p> <p>*Coils wound in opposite directions</p>		
	2.5.1	Main/tare spring cracked or broken	Detach wagon	5
	2.5.2	Auxiliary/load spring displaced or broken		
	2.5.2.1	- on empty wagon	K	4 3
	2.5.2.2	- on loaded wagon • axle box no longer horizontal	Detach wagon	5

4. Reason:

Indicate the winding direction of the springs

5. Assess potential positive/negative impacts

Assess the possible positive and negative effects (operations, costs, administration, interoperability, safety, competitiveness, etc.), on a scale of 1 (very low) to 5 (very high).

Justify observations

A positive impact (3):

- on quality due to better diagnosis of the damage (value: 4)
- on costs due to a reduction in unnecessary withdrawals from service (value:1)

Positive impacts:

Operations, interoperability, safety, competitiveness (value: 4)

6. Safety appraisal of proposed amendment

Description of actual/target system, and scope of change to be made (see points 1 and 2).

Performance of risk analysis is unnecessary where only recognised standards are implemented.

Safety appraisal performed by: not done, since adaptation results from the aforementioned standards.

6.1. Does the change have an impact on safety?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
Reason: Improperly mounted springs are dangerous	
6.2. Is the change significant?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
Reason: The indications are already contained within the text, but without a corresponding code	
6.3. Determining and classifying risk:	<input checked="" type="checkbox"/> N/A
6.3.1. Effect of change in normal operation:	
6.3.2. Effect of change in the event of disruption / deviation from normal operation:	
6.3.3. Potential misuse of system:	
<input checked="" type="checkbox"/> No	
<input type="checkbox"/> Yes (describe possible misuse):	
6.4. Have safety measures been applied?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
For each type of risk, one of the following risk acceptance criteria is to be selected: <ul style="list-style-type: none"> • Code of practice • Use of reference system • Explicit risk estimate Indications contained in GCU Appendix 10, Annex 2 GCU Appendix 9, Annex 1, drawing in code 2.5	
6.5. Has a risk analysis been submitted to the assessment body?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
Assessment body: Attach the verdict reached by the assessment body	[appendix]