DD CLC/TS 50206-3:2010

BSI Standards Publication

Railway applications — Rolling stock — Pantographs: Characteristics and tests

Part 3: Interface between pantograph and rolling stock for rail vehicles

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According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into an international Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

The UK participation in its preparation was entrusted to Technical Committee GEL/9/2, Railway Electrotechnical Applications - Rolling stock.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Applications ferroviaires - Matériel roulant - Pantographes: Caractéristiques et essais - Partie 3: Interface entre le pantographe et le matériel roulant ferroviaire

Bahnanwendungen - Bahnfahrzeuge - Merkmale und Prüfungen von Stromabnehmern - Teil 3: Schnittstelle zwischen Stromabnehmer und Fahrzeug

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Foreword

This Technical Specification was prepared by SC 9XB, Electromechanical material on board rolling stock, of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

It was circulated for voting in accordance with the Internal Regulations, Part 2, Subclause 11.3.3.3 and was approved by CENELEC as CLC/TS 50206-3 on 2010-09-27.

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The following date was fixed:

– latest date by which the existence of the CLC/TS has to be announced at national level (doa) 2011-03-27

Contents

1 Scope

This Technical Specification defines mechanical, pneumatic and electrical interfaces between one single arm pantograph and the roof of mainline rail vehicles. In contrast to EN 50206-1, it is assumed that the insulators are part of the pantograph scope of supply. The air supply of the pantograph to the vehicle roof is in the responsibility of the car manufacturer.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12663-1, *Railway applications – Structural requirements of railway vehicle bodies – Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons)*

EN 50206-1:2010, *Railway applications – Rolling stock – Pantographs: Characteristics and tests – Part 1: Pantographs for main line vehicles*

ISO 8573-1:2010, *Compressed air – Part 1: Contaminants and purity classes*

3 Terms and definitions

Fur the purposes of this document, the following terms and definitions apply.

3.1
target area
proposed plan area in the xy-plane for the location of the electrical and pneumatic interfaces

NOTE The z-dimension of the target area is a function of the insulation coordination.

4 Coordinate system

The orientation of the x- and y-axes of the coordinate system used in this document is in accordance with those given in EN 12663-1. All x- and y-dimensions are given in reference to the lateral centre of the pantograph's collector head pivot (see item 9 in Table 1 in EN 50206-1:2010) and the longitudinal centre line of the pantograph. Negative sign of x-coordinate is towards the knee of the pantograph.

NOTE The collector head pivot is in many cases in the same cross-sectional area that defines the pantograph's profile. The distance of this section to the adjacent end axle or the nearest bogie pivot (symbol n in EN 15273-1) is an input to the pantograph gauge verification of a vehicle.

5 Interfaces

5.1 Mechanical interface

5.1.1 Position of insulators

The pantograph insulators shall be placed on the vehicle roof at positions given in Table 1. The location in the xy-plane is illustrated in Figure 1 by cyan squares.

Table 1 — Possible locations for insulators

Position	1	2	3	4	5	6
x coordinate [mm]	0	0	-800	-600	-600	100
y coordinate [mm]	-475	475	0	-475	475	0

The vehicle manufacturer shall make provisions for all insulator positions given in Table 1. However, a pantograph shall have a maximum of 4 insulators.

The permissible tolerance for the distance between the origin of the coordinate system and the lateral centre of the pantograph's collector head pivot is +/- 50 mm.

5.1.2 Mounting of the insulators

Table 2 lists details for the insulator mounting.

Table 2 — Details for insulator mounting

Item	**specification**
Number of fastening elements	2
Distance between fastening elements	180 mm (± 90 mm from centre of insulator position defined in Table 1)
Tolerance	± 1 mm
Orientation of fastening elements	Insulator position 1, 2, 4, 5: parallel to the centre line of the train Insulator position 3, 6: rectangular to the centre line (see Figure 1)
Type of thread on the vehicle roof	female thread
Thread	M16

5.1.3 Others

Fastening elements for insulators of a particular pantograph shall fulfil the requirements of EN 12663-1.

The preferable connecting element between pantograph frame and insulator is one M16 screw.

NOTE This enables a safe assembly for every speed.

5.2 Pneumatic interface

All pneumatic connections have to be made in the pneumatic target area. Its centre and its dimension are given in Table 3 and illustrated in Figure 1 by a green rectangle.

Table 3 — Details for pneumatic interface

Item	**specification**
Centre of the target area [mm]	(x, y) = (- 1 000, 300)
Size of the target area [mm]	x = 200, y = 300
Orientation	In parallel to the longitudinal center line of the vehicle with inlet to the pantograph from knee side
Maximum air pressure	1,0 MPa (= 10 bar)
Air quality	according to ISO 8573-1:2010 • solid particles: class 4 • humidity & liquid water: class 2 • Oil: class 4
Type and diameter of thread	female, G1/4"

All pneumatic connections must be labelled (to prevent wrong assembly).

NOTE The target area of the pneumatic interface is at the pantograph.

5.3 Electrical interface

All electrical connections have to be made in the electrical target areas. A pantograph has to have electrical interfaces according to Table 4. Size and position are illustrated in Figure 1 by red and yellow rectangles.

Table 4 — Details for electrical interfaces

Interface	Item	specification
General	Number of main interfaces	2
	Number of auxiliary interfaces	2
	Hole size for fastening elements	13 mm diameter
Main	Centre of the target area [mm]	(x, y) = (- 800, 350) and (x, y) = (- 800, - 350)
	Size of the target area [mm]	x = 200, y = 200
	Number of fastening elements	4
	Alignment of fastening elements [mm]	Square in xy-plane x = 45, y = 45
Auxiliary	Centre of the target area [mm]	(x, y) = (125, 350) and (x, y) = (125, - 350)
	Size of the target area [mm]	x = 250, y= 200
	Number of fastening elements	2
	Alignment of fastening elements	perpendicular to longitudinal centre line of vehicle, 45 mm spacing

The auxiliary interface is to be used to interconnect 2 adjacent pantographs, but may also be used for main connections.

5.4 Overview on all interfaces

Figure 1 summarizes the interfaces and their position to each other.

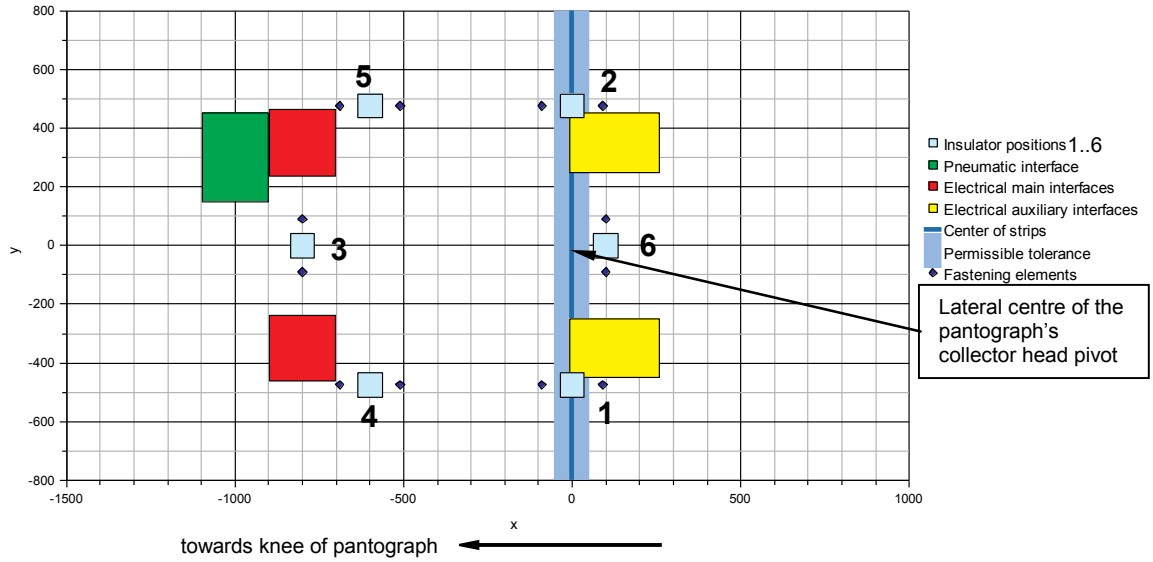

Figure 1 — Position of the various interfaces to each other

Bibliography

EN 15273-1, *Railway applications – Gauges – Part 1: General – Common rules for infrastructure and rolling stock*

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