SLOVENSKI STANDARD
SIST EN 16241:2014+A1:2017

01-januar-2017

Železniške naprave - Regulator zavornega vzvodja

Railway applications - Slack adjuster

Bahnanwendungen - Gestängesteller

Applications ferroviaires - Régleur de timonerie

Ta slovenski standard je istoveten z: **EN 16241:2014+A1:2016**

ICS:

45.040	Materiali in deli za železniško tehniko	Materials and components for railway engineering

SIST EN 16241:2014+A1:2017 **en,fr,de**

EUROPEAN STANDARD

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English Version

Railway applications - Slack adjuster

Applications ferroviaires - Régleur de timonerie

Bahnanwendungen - Gestängesteller

This European Standard was approved by CEN on 16 November 2013 and includes Amendment 1 approved by CEN on 8 August 2016.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 16241:2014+A1:2016) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 2016-08-08.

This document supersedes EN 16241:2014.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1〉 〈A1▐.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard establishes general principles for designing, manufacturing and type testing slack adjusters.

NOTE 1 These requirements cannot be written in sufficient detail to ensure good workmanship or proper construction. Each manufacturer is therefore responsible for taking every necessary step to make sure that the quality of workmanship and construction is such as to ensure accordance with good engineering practice.

It is applicable to double acting slack adjusters designed to control the block (shoe) to tread (wheel) clearance of tread braked vehicles with conventional brake cylinders and rigging, without taking the track-gauge into consideration.

NOTE 2 The term used for this device by UIC is “Brake rigging adjuster”.

2 Normative references

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

EN 60721-3-5:1997, *Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 5: Ground vehicle installations*

EN 61373, *Railway applications — Rolling stock equipment — Shock and vibration tests (IEC 61373)*

3 Terms and definitions

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

3.1
tread
surface of a monobloc wheel or of a separate tread on which the brake block rubs

3.2
slack adjuster
device to compensate for wear of brake shoes, wheel treads, and brake rigging pivots to maintain a nominal block to tread clearance

Note 1 to entry: These slack adjusters are fitted separately in the brake rigging as independent devices. These slack adjusters are sometimes referred to as regulators.

3.3
double acting
works in two directions to take up excessive clearance between the brake block and tread or pay out to allow the nominal clearance to be restored between the brake block and tread where this is reduced

3.4
take up
reduction in the length of the brake rigging caused by the operation of the slack adjuster

3.5
pay out
increase in length of the brake rigging caused by the operation of the slack adjuster

4 Design and manufacture

4.1 Requirements

4.1.1 General

Slack adjusters shall be able to operate in the brake rigging of railway rolling stock. Slack adjusters shall be able to be mounted in both exposed and protected locations and function correctly in normal conditions of operation. The impact of direct pollution and shocks linked to loading and unloading of vehicles are excluded from this European Standard.

4.1.2 Maintenance of block to tread clearance

Slack adjusters shall operate to maintain a set block to tread clearance within a tolerance of ± 2 mm. The block to tread clearance is a function of the setting of the slack adjuster control dimension "A" which is chosen to provide the required block to wheel clearance when fitted to a vehicle. Examples of installations are shown in Figure 1. This is tested in accordance with 6.3.3.1.

Figure 1

4.1.3 Take up

Slack adjusters shall take up excessive block to tread clearance in a minimum number of cycles of the brake (application and release), but this shall not be more than 3 cycles. This requirement is tested in accordance with 6.3.3.2.

4.1.4 Pay out

Slack adjusters shall pay out, if the block to tread clearance is insufficient, to restore the correct block to tread clearance. This situation may come about due to a change in the vehicles laden state. This pay out shall not increase the distance between brake block and wheel when releasing after the first brake application when the insufficient block to tread clearance is detected, but only after the release following the second brake application if the distance remains insufficient. This is to prevent the clearance being increased due to the presence of ice, snow or other foreign bodies. This requirement is tested in accordance with 6.3.3.3.

4.1.5 Shock and Vibration

4.1.5.1 Shock

Slack adjusters shall not take up or pay out when subjected to longitudinal shocks in accordance with EN 61373 for body mounted equipment with one level of suspension, category 2. This requirement is tested in accordance with 6.3.3.4.1.

4.1.5.2 Vibration

Slack adjusters shall not take up or pay out when subjected to vibrations in accordance with EN 61373 category 2, for body mounted equipment with one level of suspension. This requirement is tested in accordance with 6.3.3.4.2.

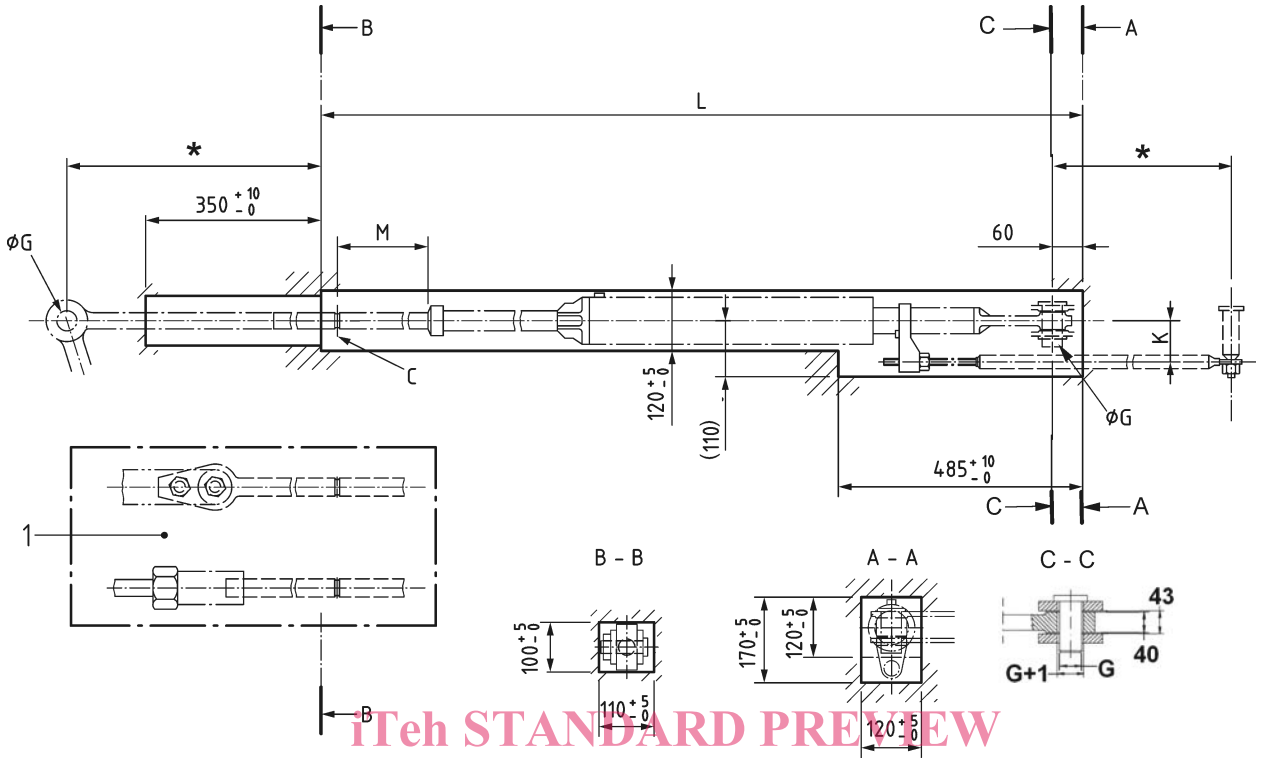
4.1.5.3 Compliance of existing designs

Should existing designs of slack adjuster be subject to the requirements of this standard, compliance with the shock and vibration requirements of this clause can be demonstrated by the documentary evidence of 10 years satisfactory service experience with a minimum of 3 operators, each with a minimum of 500 slack adjusters in service.

4.1.6 Space envelope

Slack adjusters which act to reduce or extend the length of an active member (rod that takes the braking loads) in the brake rigging shall fit within the space envelope of Figure 2 where their load (force) capability is up to 75 kN and Figure 3 where it is greater than 75 kN and up to 130 kN.

Dimensions in millimetres

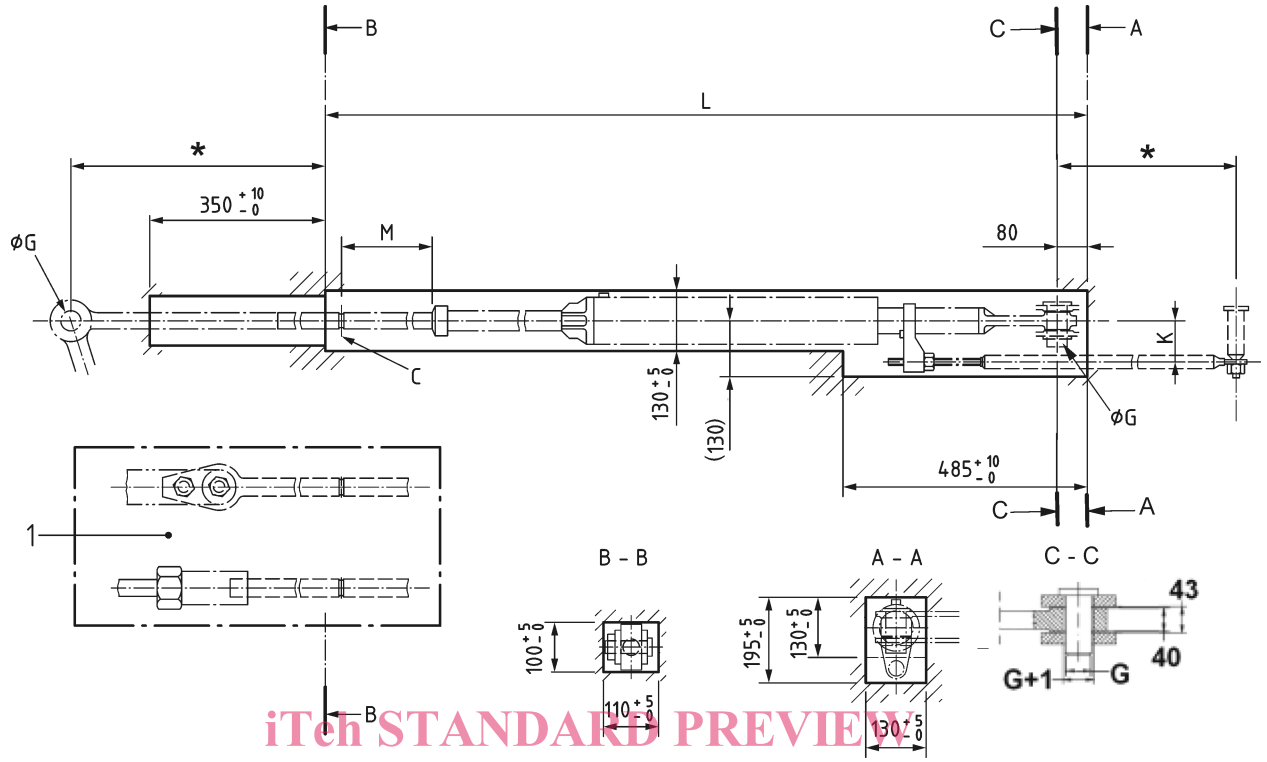


Key

*	Length adjusted to the vehicle		
C	Measurement mark		
G	36 mm pin diameter Pins shall be a case hardened steel where Rm is greater or equal to 370 N/mm^2 NOTE Rm is the tensile strength of the steel.		
K	83 mm		
Slack Adjuster type		1	2
L	Length	2 325 mm	1 875 mm
M	Take up	580 mm	440 mm
1	Alternative attachment arrangements for the brake rigging		
(XX)	Figures in brackets ( ) are nominal values.		

Figure 2 — Space envelope – loads (forces) up to 75 kN

Dimensions in millimetres



Key

*	Length adjusted to the vehicle			
C	Measurement mark			
G	40 mm pin diameter Pins shall be a case hardened steel where Rm is greater or equal to 370 N/mm^2 NOTE Rm is the tensile strength of the steel.			
K	83 mm			
Slack Adjuster type		1	2	3
L	Length	2 390 mm	1 940 mm	1 640 mm
M	Take up	580 mm	440 mm	280 mm
1	Alternative attachment arrangements for the brake rigging			
(XX)	Figures in brackets ( ) are nominal values.			

Figure 3 — Space envelope – loads (forces) from 75 kN to 130 kN

4.1.7 Maximum load absorption

The slack adjuster shall not absorb more than 2 kN of the brake application force. This requirement is tested in accordance with 6.3.5.

4.2 Service life

A life test shall be carried out on the slack adjuster to demonstrate it is fit for service on railway vehicles and to verify the maintenance requirements for the operational design life so these can be taken into