



INTEROPERABILITY UNIT

TECHNICAL DOCUMENT SPECIFICATIONS ON SLACK ADJUSTERS

REFERENCE: ERA/TD/2012-05/INT

DOCUMENT TYPE: TECHNICAL DOCUMENT

VERSION: 1.0

DATE: 04/06/2012



AMENDMENT RECORD

Version	Date	Section number	Modification/description	Author
1.0	04/06/2012		Preparation of version 1.0	Andreas SCHIRMER



Table of Contents

1. Functional specifications of slack adjusters	4
2. Specifications for slack adjusters	5
3. Design assessment of slack adjusters.....	7
4. Product assessment for slack adjusters	8



1. Functional specifications of slack adjusters

The assembly of the slack adjuster shall be aimed to prevent any partial or full detachment of these components.

A device to automatically maintain the design clearance between the friction pair shall be provided.

A minimum of 15 mm clearance between the slack adjuster envelope and other components shall be provided.

Provision shall be made for the necessary free clearances for the slack adjuster extremities and connections to be maintained at all times.

For slack adjusters within a bogie, there is no special envelope. But, for all design conditions, the minimum clearance necessary between the slack adjuster and other components shall be ensured to prevent contact. Should a smaller clearance be required, the reasons why contact will not occur shall be demonstrated.

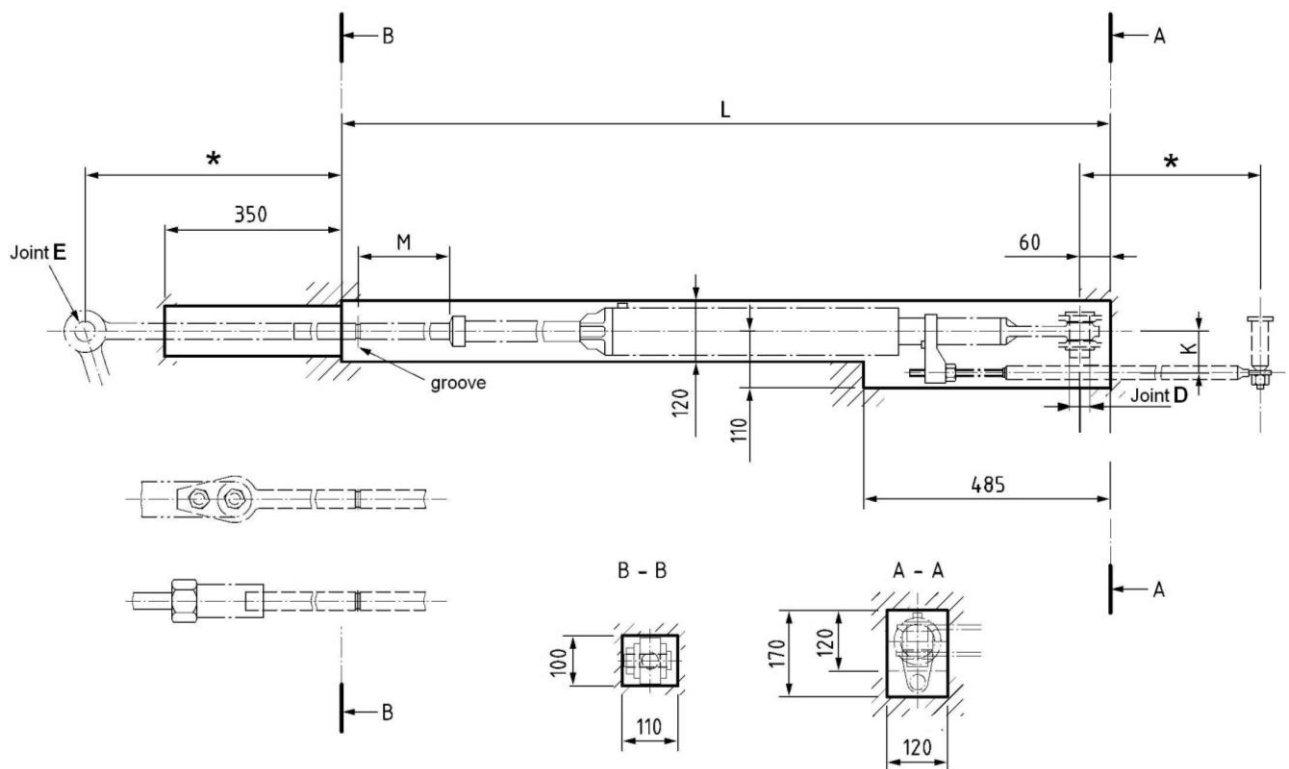
2. Specifications for slack adjusters

Slack adjusters are necessary to automatically maintain a nominally constant clearance between the friction pair (wheel and brake block or disc and brake pad) in order to maintain the braking characteristics and guarantee the braking performance.

The slack adjuster shall not absorb more than 2 kN of the brake application force. The performance characteristics of the slack adjuster shall not be varied by environmental conditions (vibrations, winter conditions, etc.).

There is no requirement for interchangeability of slack adjuster, but if they are to be interchangeable the space envelopes as set out in figure 1 and 2 apply (only the values in the table are necessary).

Interchangeable Slack adjusters which are placed within the underframe shall not exceed the space envelopes as set out in figure 1 and 2.

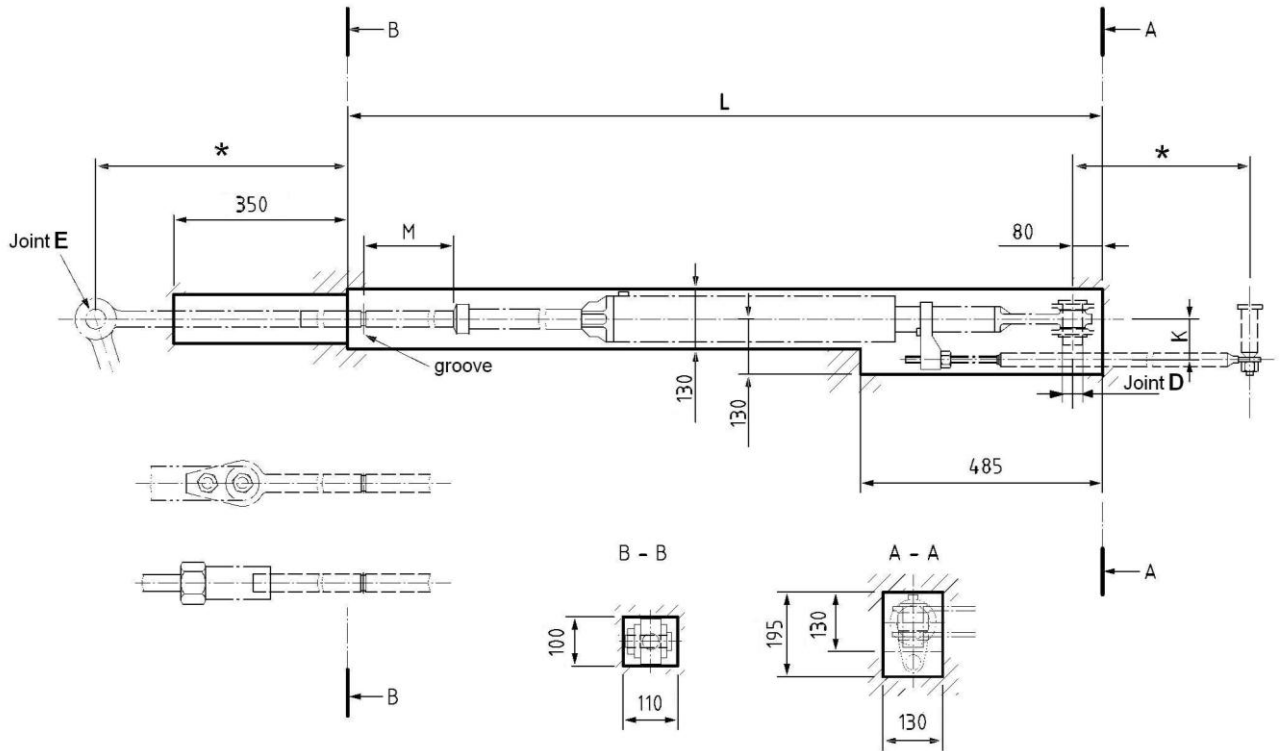


sequence	length	Attribute of the slack adjuster			
		length to adjust	load	reagent	distance
	L	M			K
1	2325	580	75kN	2kN	83**
2	1876	440			

* adapted at the wagon

** recommended for new engineering

Figure 1: Space envelope for loads up to a maximum of 75 kN



sequence	length	Attribute of the slack adjuster			
		length to adjust	load	reagent	distance
	L	M			K
1	2390	580	75kN	2kN	83**
2	1940	440			
3	1640	280			

* adapted at the wagon
 ** recommended for new engineering

Figure: 2: Space envelope for loads greater than 75 kN



3. Design assessment of slack adjusters

The design assessment of the slack adjuster shall be made by ensuring the mechanical strength is suitable for the load to be transmitted. Interchangeable slack adjusters are shown in chapter 2 with their permitted maximum loads. The assessment will also ensure that the friction pair distance can be maintained within sensible limits so that the friction pair do not touch each other without braking, the braking characteristics are maintained and the braking performance is guaranteed.

A life test shall be performed to demonstrate the suitability of the unit for service on railway vehicles and to verify the maintenance requirements for the operational design life. This shall be carried out at the maximum rated load cycling through the full range of adjustment.



4. Product assessment for slack adjusters

Every slack adjuster shall be tested. The features to be tested are:

- Maximum take up
- Maintenance of set clearance
- Incremental take up
- Letting out when no clearance to obtain set clearance (double acting units only)
- Ability to reset to minimum length (contracting slack adjuster) or maximum length (extending slack adjuster)