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CONSTRUCTIONAL ARRANGEMENTS ON COACHES WITH A VIEW TO THE APPLICATION OF THE AUTOMATIC COUPLER ON THE MEMBER RAILWAYS OF THE UIC AND ON THE MEMBER RAILWAYS OF THE OSJD

NB : This same leaflet is published by the OSJD (1) as 530-1

(1) OSJD : Organisation for Collaboration between Railways with headquarters in Warsaw.

UPDATING

Leaflet 567-3, 1st edition, 1.1.1983			
Amendment		Amendment	
No.	Date	No.	Date
1	1-7-85		

N O T E

This leaflet is part of a series which also includes :

UIC Leaflet 440 : Loudspeaker systems in RIC coaches.

1-1-85 UIC Leaflet 751-3 : Technical regulations relating to ground - train radio systems for international services.

1-GENERAL

1-1-85 1.1 - The following provisions define the minimum conditions with which loudspeaker and telephone systems must comply in RIC coaches in order to :

a) guarantee the satisfactory operation of the system in every respect when several coaches from different countries are coupled together to form an international train;

b) ensure a quality of broadcasting which will satisfy the minimum requirements of all concerned.
These regulations leave each Railway concerned free to install the system in the way best suited to its requirements and to take advantage of rapid technical developments in this field.

The system accepted as standard is that which includes as many amplifiers as there are coaches with loudspeaker systems.

1-1-85 This system provides for the use of a cable with three quads, two of which are for the loudspeaker system and for a remote link between the driver and the guard, and the third one for other purposes.

1-1-85 A distinction must be drawn between three types of RIC coach :

1 - those which have simply a set of loudspeakers, an amplifier and a microphone for announcements over a public-address system,

2 - those which have a set of loudspeakers, an amplifier and a telephone for announcements over the public-address system and telephone link,

3 - those which, in addition to one or other of the above-mentioned systems, are also fitted with a point for connecting a portable public address and music broadcasting unit (including, for example, facilities for an official travelling with a cruise train).

* 1.2 - All RIC coaches equipped with a loudspeaker system shall include :

1.2.1 - Loudspeakers situated in the compartments and side corridor;

1.2.2 - A power amplifier;

1.2.3 - Wiring in the coach and connections;

1.2.4 - A supply circuit with protective equipment;

1.2.5 - Remote control accessories.

1-1-85

* 1.3 - All RIC coaches with loudspeaker systems and telephone call stations in accordance with point 1.1 b), 2 and 3 shall be fitted with the equipment listed in § 9.2.

* 1.4 - All RIC coaches with loudspeaker systems and a point for connecting a portable public address and music broadcasting unit must be fitted in addition with :

1.4.1 - a permanently fixed socket for connecting up other items of equipment (pick-up, magnetic tape-reader, etc.) for longer broadcasts.

1.4.2 - a two-way switch for the purpose of supplying modulated current either only to the coach containing the portable public address and music broadcasting unit or to all coaches on the train which are provided with a loudspeaker system.

1.4.3 - if the connection to the portable public address and music broadcasting unit is situated in the immediate vicinity of a loudspeaker, it is recommended that the possibility should exist of cutting out this loudspeaker.

* 1.5 - Plate 1 shows the basic layout with which installations must comply.

N O T E

This leaflet forms part of a set which also includes :

Leaflet 522	:	Technical conditions to be fulfilled by the automatic coupler of the UIC and OSJD member Railways
Leaflet 561	:	Means of intercommunication for coaches
Leaflet 567-1	:	Standard X- and Y-type coaches accepted for running on international services
Leaflet 567-2	:	Z-type Standard coaches accepted for running on international services - Characteristics
Leaflet 567-4	:	Standard open bogie van adapted for the conveyance of motor cars - Characteristics
Leaflet 569	:	Regulations to be observed in the construction of coaches and vans suitable for conveyance by train ferry

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APPENDIX 4 - Space to be reserved on the coach for :
- suspension - Variant 1 (cross-beam suspension)
- gathering range of the coupling arm
- articulation
- elastic element (flanged solution)

APPENDIX 5: Space to be reserved on the coach for :
- suspension - Variant 2 (telescopic-leg suspension)
- gathering range of the coupling arm
- articulation
- elastic element (flanged solution)

APPENDIX 6: Space requirement for two coupler bodies coupled together in the normal position (to be provided)

APPENDICES 7.1, 7.2, 7.3: Basic conditions relating to the space to be reserved in front of the buffer securing plane

APPENDICES 8a, 8b : Lock control for automatic coupler (to be provided)

APPENDICES 9a, 9b Cock operating (to be provided)

APPENDIX 10: Mounting of automatic coupler with traction and compression stops wnd with cross-beam suspension

APPENDIX 11: Mounting of automatic coupler with traction and compression stops and with telescopic-leg suspension

APPENDIX 12: Mounting of automatic coupler with flange solution and with cross-beam suspension

APPENDIX 13: Mounting of the automatic coupler with flange solution and telescopic-leg suspension

APPENDIX 14 : Principal dimensions for the interchangeability of the elastic element for coaches

APPENDIX 15 : Suspension - Variant 1 (cross-beam suspension)

APPENDIX 16 : Suspension - Variant 2 (telescopic-leg suspension)

FOREWORD

This leaflet is valid for the European member railways of one or both of the railway unions with the exception of the Soviet Railways to which other provisions apply.

All the conditions specified in this leaflet, with the exception of those in chapter 4, are obligatory in the case of coaches (1) built after ..... and intended for fitting with the automatic coupler (2).

The conditions marked by a vertical line in the margin must, in the case of coaches to be fitted with the automatic coupler, be satisfied by the date upon which the automatic coupler is fitted.

(1) Coaches for which the construction documents have not yet been provided
(2) Deadline : 6 months after confirmation of the leaflet by the organisations concerned.

0 - PRELIMINARY REMARK

The term "coach" covers :

- coaches with seats, couchette coaches, sleeping cars, restaurant cars, open saloon coaches, mail vans, vans and open vans designed for transporting cars

1 - GENERAL

1.1 - For a coach to be suitable for being fitted and operated with the automatic coupler it must satisfy the following conditions :

- strength and structural conditions of bodies or underframes;
- conditions to be met as regards distance between bogie pivots or wheelbase and overhang, with a view to coupling;
- conditions to be fulfilled in order to guarantee operating safety;
- conditions relating to the mounting of the automatic coupler and accessories.

1.2 - Amendments or additions to this leaflet shall be subject to agreement between the UIC and the OSJD.

2 - STRENGTH AND STRUCTURAL CONDITIONS OF BODIES OR UNDERFRAMES

The body or the underframe of coaches shall be so designed as to enable the subsequent mounting of the automatic coupler without the need for any substantial alterations.

2.1 - Strength of body or underframe with respect to static loads

2.1.1 - Loads to be withstood by body or underframe

The body or underframe shall be designed to withstand :

- axial loads of 2000 kN in compression and 1500 kN or 1000 kN in tension applied as indicated in figures 1 to 3, 6 and 7 of appendix 1,
- during the transition period until the side buffers are removed, or in the event of the side buffers being retained, (a) loads of 1000 kN applied to each of the side buffers, and (b) a load of 500 kN applied diagonally as indicated in figures 4 and 5 of appendix 1.

In the case of longitudinal loading, allowance shall be made for the superimposition of vertical loads due to certain loading conditions and acting on the body or the underframe, and also for the provisions applicable in connection with the loading of the end wall.

2.1.2 - Strength

In the case of the loads indicated in 2.1.1, the stresses occurring in the underframe or in the body shall be lower than those accepted for the particular form of construction (e.g. welded construction).

The loads shall under no circumstance exceed the yield point (1) of the material used. In the case of the loads according to 2.1.1, no permanent deformation shall be observed in the body or in the underframe.

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(1) σ 0.2 for steels whose stress/strain curve does not exhibit any clearly defined yield point.

For example, for steels with a breaking strength of 370 N/mm2 and 520 N/mm2, the values shown in the following table shall not be exceeded :

Steel with a tensile strength of			
370 N/mm2		520 N/mm2	
Zone a	Zone b	Zone a	Zone b
220 N/mm2	240 N/mm2	325 N/mm2	360 N/mm2

Zone a = assembly area or change in section

Zone b = other areas

2.2 - Arrangement of automatic coupler

The height of the longitudinal centreline of the automatic coupler or the height of the drawhook of the screw coupling shall meet the following conditions :

- minimum height above rail level in the case of a fully occupied or fully loaded coach, stationary and at the limit of wear : 950 mm (1),
- maximum height above rail level in the case of an empty coach, stationary and in new condition : 1045 mm (1).

2.3 - Devices for damping longitudinal play and for protecting the end walls

The question as to whether to retain the side buffers as an elastic element and/or as a device for affording protection to the end walls (spacer pieces) has not yet been settled.

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(1) See note 11 (appendices 2 and 3)
note 5 (appendix 4)
note 7 (appendix 5)

If the side buffers are used for either or both purposes the height of the buffer centrelines and the dimensions of the buffer heads shall satisfy the conditions in force.

2.4 - Spaces to be left free

The coaches should be designed in such a way as to be capable of taking the control devices for the locking system of the automatic coupler, and the structural form of the underframes should conform to one of the following versions :

- solution with traction and compression stops, with UIC/OSJD suspension - variant 1 (cross-beam suspension),
- solution with traction and compression stops, with UIC/OSJD suspension variant 2 (telescopic-leg suspension),
- flange solution with UIC/OSJD suspension variant 1 (cross-beam suspension),
- flange solution with UIC/OSJD suspension variant 2 (telescopic-leg suspension).

2.4.1 - Mounting and removal of coupler head, elastic element and suspension

To enable the coupler head to be attached to or separated from the elastic element it must be possible to fit or remove the articulation pin from below and/or above. It shall moreover be possible to fit or remove this pin in front of the buffer beam (with the elastic element in the forward position) from below and/or above.

The elastic element may be fitted and removed from below and/or from the front.

The suspension is mounted and removed as follows :

- UIC/OSJD suspension variant 1 (cross-beam suspension) : downwards from below,
- UIC/OSJD suspension variant 2 (telescopic-leg suspension) : forwards from the front.

2.4.2 Arrangement with UIC/OSJD suspension variant 1 (cross-beam suspension)

In order to be able to accommodate the automatic coupler with the UIC/OSJD suspension variant 1, the underframe of the coach shall be prepared in accordance with appendix 2 (solution with stops) or appendix 4 (flange solution).

Appendix 15 provides indications concerning the space requirements and the connecting dimensions of the UIC/OSJD suspension variant 1.

2.4.3 - Arrangement with UIC/OSJD suspension variant 2 (telescopic-leg suspension)

In order to be able to accommodate the automatic coupler with the UIC/OSJD suspension variant 2, the underframe of the coach shall be prepared in accordance with appendix 3 (solution with stops) or appendix 5 (flange solution).

Appendix 16 provides indications concerning the space requirements and the connecting dimensions of the UIC/OSJD suspension variant 2.

2.4.4 - Swivel zone of the automatic coupler and parts thereof

In order to maintain a swivel zone for the automatic coupler and parts thereof, a free space shall be provided in front of the plane of the buffer fastenings.

The data required by the designer for defining this space is assembled in the following appendices :

- Appendix 6 : Space required by two coupling units coupled together in the normal position

- Appendix 7 : Basic conditions relating to the space to be reserved in front of the buffer securing plane.

2.4.5 Mounting space and swivel zone for the control devices

To provide for the mounting and swivelling of the control devices, the following free space shall be reserved :

- Appendix 8 : for the locking mechanism of the automatic coupler

- Appendix 9 : for control of the cocks.

3 - CONDITIONS TO BE SATISFIED WITH RESPECT TO THE WHEELBASE OR THE DISTANCE BETWEEN BOGIE CENTRES AND THE OVERHANG OF COACHES WITH A VIEW TO THE COUPLING OF COACHES FITTED WITH THE AUTOMATIC COUPLER

3.1 - General

The possibility of coupling together vehicles fitted with the automatic coupler, with a high degree of reliability and without any outside help is related to the gathering ranges of the coupling heads and their respective positions during the coupling operation.

It is essential in particular that the reciprocal movements of the heads both vertically and horizontally should not encroach beyond the gathering ranges in the respective directions.

3.2 - Possibility of coupling in the vertical direction

The technical characteristics specified for the coupling heads require that these components couple together with a maximum vertical displacement of their centrelines of 140 mm.

In view of the fact that the centreline of the coupler measured vertically above rail level and in the rest position should be between 1045 and 950 mm regardless of the loading condition of the coach (see point 2.2) it may be assumed that coupling in the vertical direction is always guaranteed.

3.3 - Possibility of coupling in the horizontal direction

The technical characteristics specified for the coupling heads require their gathering range to be 220 mm on each side of the longitudinal centreline of the coach.

It has also been specified that coupling of coaches fitted with the automatic coupler must be possible on straight track and at the point of transition between straight track and 250 m curve without the need for manual intervention.

UIC standard coaches type X or Z and Y fulfill conditions 11a of UIC Leaflet 522 and OSJD Leaflet 522/1; other coaches shall be checked individually to ensure that these conditions are satisfied.

The formula giving the maximum lateral displacement between the coupling heads of two vehicles (see UIC Leaflet 527) is as follows :

$$A = \frac{an + n^2}{2R} + \frac{2n + a}{a}(q_1 + q_2)\,k + \frac{2n' + a'}{a'}(q_1' + q_2')\,k'$$

in which :

A = lateral displacement between the two coupling heads,

B = curve radius

a = wheelbase or distance between bogie pivots of vehicle in question

n = maximum overhang in the coupling plane of the vehicle in question

q_1 = maximum lateral play between the track centreline and the wheelset of the vehicle in question

q_2 = maximum lateral play between the wheelset and the longitudinal centreline of the vehicle in question

k = reduction factor

a', n', q_1', q_2', k' relate to vehicles on straight track.

The reduction factors k and k' are 0,25 (1) for coaches with bogies having wide lateral play (without horizontal damping) and 0.4 (1) for coaches with bogies having narrow transverse play (with horizontal damping).

4 - CONDITIONS TO BE SATISFIED IN ORDER TO ENSURE OPERATING SAFETY

To be provided

5 - CONDITIONS RELATING TO THE MOUNTING OF THE AUTOMATIC COUPLER AND OF ITS ACCESSORIES

The general provisions governing the mounting of the automatic coupler on coaches are indicated in the following appendices :

(1) provisional value

Appendix 10 : Mounting of the automatic coupler with traction and compression stops and cross-beam suspension

Appendix 11 : Mounting of the automatic coupler with traction and compression stops and telescopic-leg suspension

Appendix 12 : Mounting of the automatic coupler with flange solution and cross-beam suspension

Appendix 13 : Mounting of the automatic coupler with flange solution and telescopic-leg suspension

5.1 - Installation of elastic element between compression and traction stops (appendices 2 and 3)

5.1.1 - Traction stops

The stops and guide pieces fitted in the underframe shall be so designed as to satisfy the conditions in 2.4.1.

5.1.2 - Compression stops

The mounting recess is restricted at the rear by the compression stop surfaces c_2 or c_1 which may be in one piece or separate.

5.2 - Installation of the flanged elastic element (appendices 4 and 5)

The flange mounted in the underframe shall be so designed as to satisfy the conditions of 2.4.1. In the case of elastic elements with different distances between the support surface of the flange and the articulation pin, shims may be used.

5.3 - Articulation

The mounting and removal of the articulation pin are defined in 2,4,1.

5.4 - Interchangeability of elastic elements

Appendix 14 specifies the principal dimensions required to ensure interchangeability of the elastic elements, including those of the bores for the securing bolts of the flange cartridges. Mounting and removal of the elastic element are defined in 2,4,1.

5.5 - Support plates for the elastic element

The lower support plates for the elastic element (version with compression and traction stops) shall be so designed as to fulfil the conditions specified in 2.4.1.

5.6 - Suspension

The suspension systems shall have a disengagement device for offsetting the automatic coupler.

The disengagement device shall permit the automatic coupler to be offset by at least 8°.

- General drawing of UIC/OSJD suspension, version 1 (cross-beam suspension) : appendix 15.

- General drawing of UIC/OSJD suspension, version 2 (telescopic-leg suspension) : appendix 16.

5.7 - Air and electric lines

The arrangement and design shall be in accordance with the provisions of joint leaflet 541-2 (UIC)/536 (OSJD) "Dimensions of hose connections (brake hoses) and electric cables - type of pneumatic and electric connections and their positioning on wagons and coaches equipped with automatic coupler of UIC and OSJD member railways".

5.8 - Control of locking of automatic coupler

(To be provided)

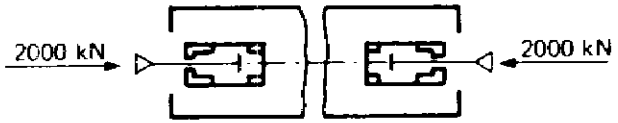
5.9 - Cock operating

(To be provided)

DISTRIBUTION OF FORCES IN THE CASE OF THE STATIC LOADING OF COACH BODIES OR UNDERFRAMES

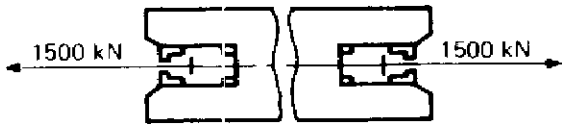
Solution with traction and compression stops

Figure 1 : Distribution of forces in the axial compression test with 2000 kN



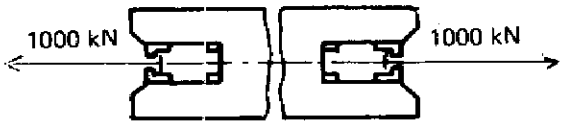
A load of 2000 kN is applied axially to the compression stops «c» (1) of the automatic coupler

Figure 2 : Distribution of forces in the axial traction test with 1500 kN



A load of 1500 kN is applied axially to the traction stops «a» (1)

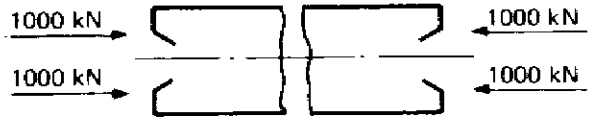
Figure 3 : Distribution of forces in the axial traction test with 1000 kN



A load of 1000 kN is applied axially to the traction stops «b« (1)

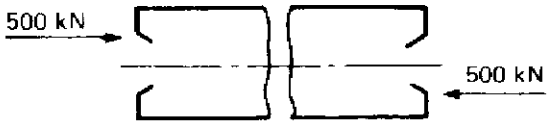
Solution with compression and traction stops or flanged version with side buffers

Figure 4 : Distribution of forces in the compression test with 1000 kN applied along the centreline of each side buffer



A load of 1000 kN is applied along the centreline of each side buffer

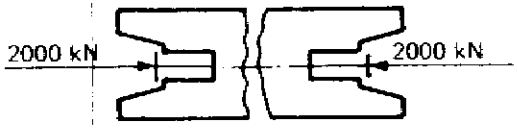
Figure 5 : Distribution of forces in the diagonal compression test with 500 kN



A load of 500 kN is applied along the centreline of side buffers in accordance with figure 5

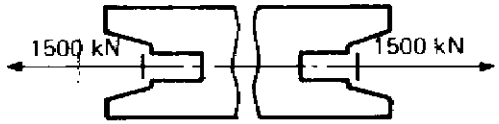
Flanged version

Figure 6 : Distribution of forces in the axial compression test with 2000 kN



A load of 2000 kN is applied axially to the bearing surface of the flange

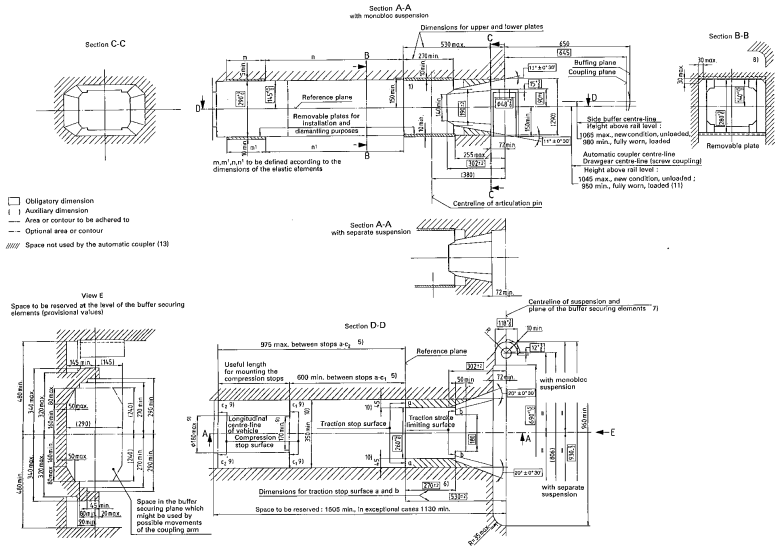
Figure 7 : Distribution of forces in the axial traction test with 1500 kN



A load of 1500 kN is applied axially to the bearing surface of the flange or to the securing bolts

(1) See appendices 2a, b, c and 3a, b, c

SPACE TO BE RESERVED ON THE COACH FOR : SUSPENSION VARIANT 1 (CROSS-BEAM SUSPENSION), GATHERING RANGE OF THE COUPLING ARM, ARTICULATION, ELASTIC ELEMENT (REMOVED FROM BELOW) (SOLUTION WITH TRACTION AND COMPRESSION STOPS)



OBSERVATIONS

1) Traction stops a and b may be removable.

2) The definition of the space to be reserved does not affect the dimensions specified for the underframe components.

3) The planes of the two stop surfaces a and of the two stop surfaces c must be between two planes running perpendicular to the centreline of the mounting recess, not further than 1.5 mm apart. In the case of welds made on the side of the contact surfaces of planes a, b and c, the weld seams must be contained within an isosceles right-angled triangle with a side not exceeding 8 mm in length.

4) The tolerances on the dimensions given in this drawing must be respected in order to ensure the correct functioning of all the components of the coupler; the manufacturers are, however, quite free to define the corresponding tolerances.

5) The distance between the surfaces of compression stops c_1 and c_2 and the surfaces of the traction stops a is defined by a dimension with a tolerance $^{0}_{-2}$.

6) The tolerance indicated, i.e. 270 ± 2 is applicable to the mounting recess. The initial dimension to be observed in the manufacture of the traction stops is 270 ± 0.5.

7) It is not essential for the buffer securing plane and the front face of the buffer beam to coincide.

8) Possible form of the mounting recess of the elastic element : R_{max} = 30 mm.

9) Concentrated central application of the compression forces is not permissible. If the surfaces of the compression stops c_1 and c_2 form a continuous plate, a suitable mounting method for the elastic element will be necessary. The continuous compression stop surfaces c_1 and c_2 may, where necessary, have in the centre an opening with a maximum diameter of 180 mm. Where the separated solution is used for the rear face of the compression stops, the distance between the stops c_1 should be at least 170 mm, and in the case of stops c_2 it should not exceed 170 mm.

10) The tolerances of the central-solebar clearance (350 mm) and the thickness of the traction stops (45 mm) are as follows :

10.1) The tolerance of the thickness of the traction stops on vehicles already fitted with solebars of $350\ ^{+4}_{0}$ may vary by + 1 to − 1

The traction stops must be chosen such that the clearance between traction stops is $260\ ^{+4}_{0}$.

10.2) The tolerance of the thickness of the fixed traction stops to be fitted on new vehicles may be $^{+1}_{0}$.

In this case, the clearance $260\ ^{+4}_{0}$ is the reference dimension to which special attention is to be paid during manufacture, and the dimension «350 min» is replaced by the dimension 353 ± 3.

10.3) When removable traction stops are used, the dimension «350 min» outside the positioning zone of the traction stops on new vehicles is likewise to be replaced by the dimension 353 ± 3.

The clearance between the inner solebars, in the positioning zone of the removable traction stops, and its tolerance depend on the profile selected for the removable traction stops.

In this case, the dimension to which special attention is to be paid during manufacture is $260\ ^{+4}_{0}$.

11) The maximum difference in height between the «new condition, unloaded» and the «fully worn condition, loaded» should not, however, exceed 85 mm for a given vehicle, in accordance with RIC provisions.

12) Permissible tolerances on dimensions where no tolerances are specified, according to UIC Leaflet 800-50 and OSJD 840-2.

13) The space not used by the automatic coupler is the space needed neither to assemble and remove the coupler nor to enable it and its additional devices to operate.

SPACE TO BE RESERVED ON THE COACH FOR : SUSPENSION VARIANT 1 (CROSS-BEAM SUSPENSION), GATHERING RANGE OF THE COUPLING ARM, ARTICULATION, ELASTIC ELEMENT (REMOVED FROM THE FRONT) (SOLUTION WITH TRACTION AND COMPRESSION STOPS)

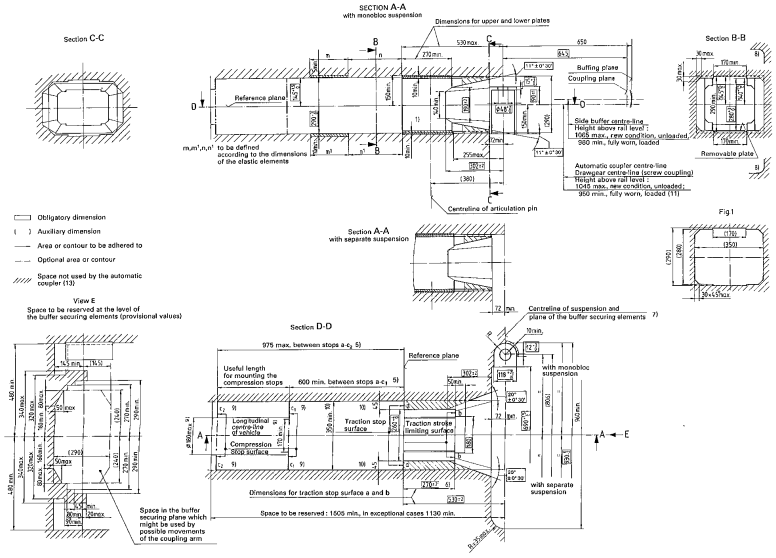


Fig 1

OBSERVATIONS

1) The traction stops a and b should be removable, and their removal should leave free the space shown in figure 1 between the stops a and the buffer securing plane.

2) The definition of the space to be reserved does not affect the dimensions specified for the underframe components.

3) The planes of the two stop surfaces a and of the two stop surfaces c must be between two planes running perpendicular to the centreline of the mounting recess, not further than 1.5 mm apart. In the case of welds made on the side of the contact surfaces of planes a, b and c, the weld seams must be contained within an isosceles right-angled triangle with a side not exceeding 8 mm in length.

4) The tolerances on the dimensions given in this drawing must be respected in order to ensure the correct functioning of all the components of the coupler; the manufacturers are, however, quite free to define the corresponding tolerances.

5) The distance between the surfaces of compression stops c_1 and c_2 and the surfaces of the traction stops a is defined by a dimension with a tolerance $^{0}_{-2}$.

6) The tolerance indicated, i.e. 270 ± 2 is applicable to the mounting recess. The initial dimension to be observed in the manufacture of the traction stops is 270 ± 0.5.

7) It is not essential for the buffer securing plane and the front face of the buffer beam to coincide.

8) Possible form of the mounting recess of the elastic element : $R_{max} = 30$ mm.

9) Concentrated central application of the compression forces is not permissible. If the surfaces of the compression stops c_1 and c_2 form a continuous plane, a suitable mounting method for the elastic element will be necessary. The continuous compression stop surfaces c_1 and c_2 may, where necessary, have in the centre an opening with a maximum diameter of 180 mm. Where the separated solution is used for the rear face of the compression stops, the distance between the stops c_1 should be at least 170 mm, and in the case of stops c_2 it should not exceed 170 mm.

10) The tolerances of the central-solebar clearance (350 mm) and the thickness of the traction stops (45 mm) are as follows :

10.1) The tolerance of the thickness of the traction stops on vehicles already fitted with solebars of $350\ ^{+4}_{0}$ may vary by + 1 to − 1. The traction stops must be chosen such that the clearance between traction stops is $260\ ^{+4}_{0}$.

10.2) The tolerance of the thickness of the fixed traction stops to be fitted on new vehicles may be $^{+1}_{0}$.

In this case, the clearance $260\ ^{+4}_{0}$ is the reference dimension to which special attention is to be paid during manufacture, and the dimension «350 min» is replaced by the dimension 353 ± 3.

10.3) When removable traction stops are used, the dimension «350 min» outside the positioning zone of the traction stops on new vehicles is likewise to be replaced by the dimension 353 ± 3.

The clearance between the inner solebars, in the positioning zone of the removable traction stops, and its tolerance depend on the profile selected for the removable traction stops.

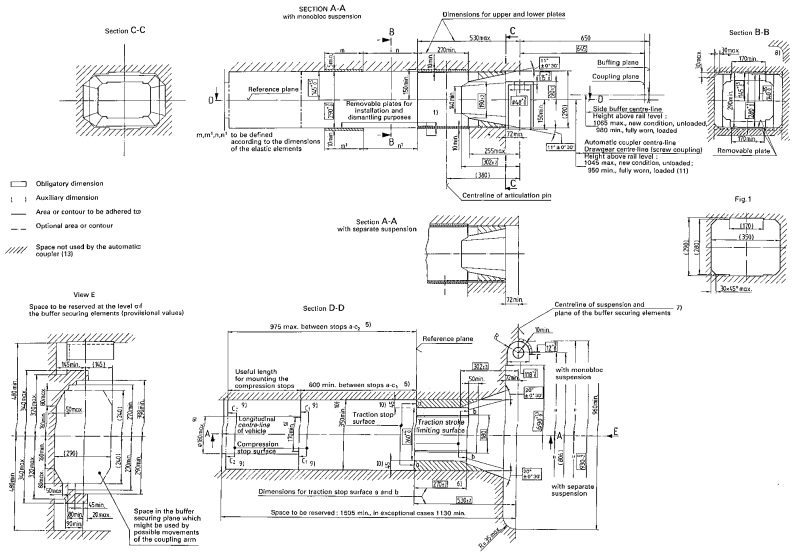
In this case, the dimension to which special attention is to be paid during manufacture is $260\ ^{+4}_{0}$.

11) The maximum difference in height between the «new condition, unloaded» and the «fully worn condition, loaded» should not, however, exceed 85 mm for a given vehicle, in accordance with RIC provisions.

12) Permissible tolerances on dimensions where no tolerances are specified, according to UIC Leaflet 800-50 and OSJD 840-2.

13) The space not used by the automatic coupler is the space needed neither to assemble and remove the coupler nor to enable it and its additional devices to operate.

SPACE TO BE RESERVED ON THE COACH FOR : SUSPENSION VARIANT 1 (CROSS-BEAM SUSPENSION), GATHERING RANGE OF THE COUPLING ARM, ARTICULATION, ELASTIC ELEMENT (REMOVED FROM BELOW AND FROM THE FRONT) (SOLUTION WITH TRACTION AND COMPRESSION STOPS)



1-7-465

OBSERVATIONS

1) The traction stops a and b should be removable, and their removal should leave free the space shown in figure 1 between the stops a and the buffer securing plane.

2) The definition of the space to be reserved does not affect the dimensions specified for the underframe components.

3) The planes of the two stop surfaces a and of the two stop surfaces c must be between two planes running perpendicular to the centreline of the mounting recess, not further than 1.5 mm apart. In the case of welds made on the side of the contact surfaces of planes a, b and c, the weld seams must be contained within an isosceles right-angled triangle with a side not exceeding 8 mm in length.

4) The tolerances on the dimensions given in this drawing must be respected in order to ensure the correct functioning of all the components of the coupler; the manufacturers are, however, quite free to define the corresponding tolerances.

5) The distance between the surfaces of compression stops c_1 and c_2 and the surfaces of the traction stops a is defined by a dimension with a tolerance $^{0}_{-2}$.

6) The tolerance indicated, i.e. 270 ± 2 is applicable to the mounting recess. The initial dimension to be observed in the manufacture of the traction stops is 270 ± 0.5.

7) It is not essential for the buffer securing plane and the front face of the buffer beam to coincide.

8) Possible form of the mounting recess of the elastic element : R_{max} = 30 mm.

9) Concentrated central application of the compression forces is not permissible. If the surfaces of the compression stops c_1 and c_2 form a continuous plate, a suitable mounting method for the elastic element will be necessary. The continuous compression stop surfaces c_1 and c_2 may, where necessary, have in the centre an opening with a maximum diameter of 180 mm. Where the separated solution is used for the rear face of the compression stops, the distance between the stops c_1 should be at least 170 mm, and in the case of stops c_2 it should not exceed 170 mm.

10) The tolerances of the central-solebar clearance (350 mm) and the thickness of the traction stops (45 mm) are as follows :

10.1) The tolerance of the thickness of the traction stops on vehicles already fitted with solebars of 350 $^{+4}_{0}$ may vary by + 1 to − 1. The traction stops must be chosen such that the clearance between traction stops is 260 $^{+4}_{0}$.

10.2) The tolerance of the thickness of the fixed traction stops to be fitted on new vehicles may be $^{+1}_{0}$.

In this case, the clearance 260 $^{+4}_{0}$ is the reference dimension to which special attention is to be paid during manufacture, and the dimension «350 min» is replaced by the dimension 353 ± 3.

10.3) When removable traction stops are used, the dimension «350 min» outside the positioning zone of the traction stops on new vehicles is likewise to be replaced by the dimension 353 ± 3.

The clearance between the inner solebars, in the positioning zone of the removable traction stops, and its tolerance depend on the profile selected for the removable traction stops.

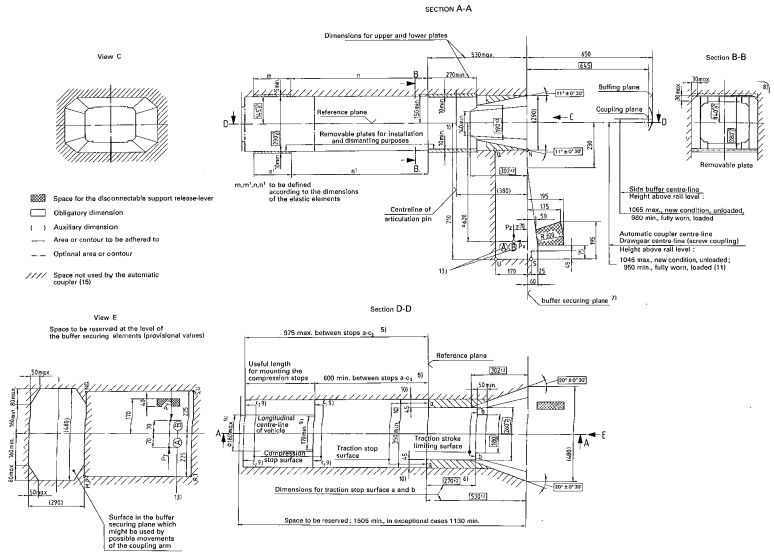
In this case, the dimension to which special attention is to be paid during manufacture is 260 $^{+4}_{0}$.

11) The maximum difference in height between the «new condition, unloaded» and the «fully worn condition, loaded» should not, however, exceed 85 mm for a given vehicle, in accordance with RIC provisions.

12) Permissible tolerances on dimensions where no tolerances are specified, according to UIC Leaflet 800-50 and OSJD 840-2.

13) The space not used by the automatic coupler is the space needed neither to assemble and remove the coupler nor to enable it and its additional devices to operate.

SPACE TO BE RESERVED ON THE COACH FOR : SUSPENSION VARIANT 2 (TELESCOPIC-LEG SUSPENSION), GATHERING RANGE OF THE COUPLING ARM, ARTICULATION, ELASTIC ELEMENT (REMOVED FROM BELOW) (SOLUTION WITH TRACTION AND COMPRESSION STOPS)



1-7-65

OBSERVATIONS

1) Traction stops a and b may be removable.

2) The definition of the space to be reserved does not affect the dimensions specified for the underframe components.

3) The planes of the two stop surfaces a and of the two stop surfaces c must be between two planes running perpendicular to the centreline of the mounting recess, not further than 1.5 mm apart. In the case of welds made on the side of the contact surfaces of planes a, b and c, the weld seams must be contained within an isosceles right-angled triangle with a side not exceeding 8 mm in length.

4) The tolerances on the dimensions given in this drawing must be respected in order to ensure the correct functioning of all the components of the coupler; the manufacturers are, however, quite free to define the corresponding tolerances.

5) The distance between the surfaces of compression stops c_1 and c_2 and the surfaces of the traction stops a is defined by a dimension with a tolerance $^{0}_{-2}$.

6) The tolerance indicated, i.e. 270 ± 2 is applicable to the mounting recess. The initial dimension to be observed in the manufacture of the traction stops is 270 ± 0.5.

7) It is not essential for the buffer securing plane and the front face of the buffer beam to coincide.

8) Possible form of the mounting recess of the elastic element : $R_{max} = 30$ mm.

9) Concentrated central application of the compression forces is not permissible. If the surfaces of the compression stops c_1 and c_2 form a continuous plate, a suitable mounting method for the elastic element will be necessary. The continuous compression stop surfaces c_1 and c_2 may, where necessary, have in the centre an opening with a maximum diameter of 180 mm. Where the separated solution is used for the rear face of the compression stops, the distance between the stops c_1 should be at least 170 mm, and in the case of stops c_2 it should not exceed 170 mm.

10) The tolerances of the central-solebar clearance (350 mm) and the thickness of the traction stops (45 mm) are as follows :

10.1) The tolerance of the thickness of the traction stops on vehicles already fitted with solebars of 350 $^{+4}_{0}$ may vary by + 1 to − 1
The traction stops must be chosen such that the clearance between traction stops is 260 $^{+4}_{0}$.

10.2) The tolerance of the thickness of the fixed traction stops to be fitted on new vehicles may be $^{+1}_{0}$.

In this case, the clearance 260 $^{+4}_{0}$ is the reference dimension to which special attention is to be paid during manufacture, and the dimension «350 min» is replaced by the dimension 353 ± 3.

10.3) When removable traction stops are used, the dimension «350 min» outside the positioning zone of the traction stops on new vehicles is likewise to be replaced by the dimension 353 ± 3.

The clearance between the inner solebars, in the positioning zone of the removable traction stops, and its tolerance depend on the profile selected for the removable traction stops.

In this case, the dimension to which special attention is to be paid during manufacture is 260 $^{+4}_{0}$.

11) The maximum difference in height between the «new condition, unloaded» and the «fully worn condition, loaded» should not, however, exceed 85 mm for a given vehicle, in accordance with RIC provisions.

12) Permissible tolerances on dimensions where no tolerances are specified, according to UIC Leaflet 800-50 and OSJD 840-2.

13) Points of application of forces A and B for transmitting the telescopic-leg suspension loads Px = 8500 N, Py = 3000 N, Pz = 10500 N.

For the load assumption, the force components Px, Py and Pz of the suspension load P should be applied either to point A or to point B.

14) Free space MNPQ-RSTU for installing the telescopic-leg suspension support.

15) The space not used by the automatic coupler is the space needed neither to assemble and remove the coupler nor to enable it and its additional devices to operate.

SPACE TO BE RESERVED ON THE COACH FOR : SUSPENSION VARIANT 2 (TELESCOPIC-LEG SUSPENSION), GATHERING RANGE OF THE COUPLING ARM, ARTICULATION, ELASTIC ELEMENT (REMOVED FROM THE FRONT) (SOLUTION WITH COMPRESSION AND TRACTION STOPS)

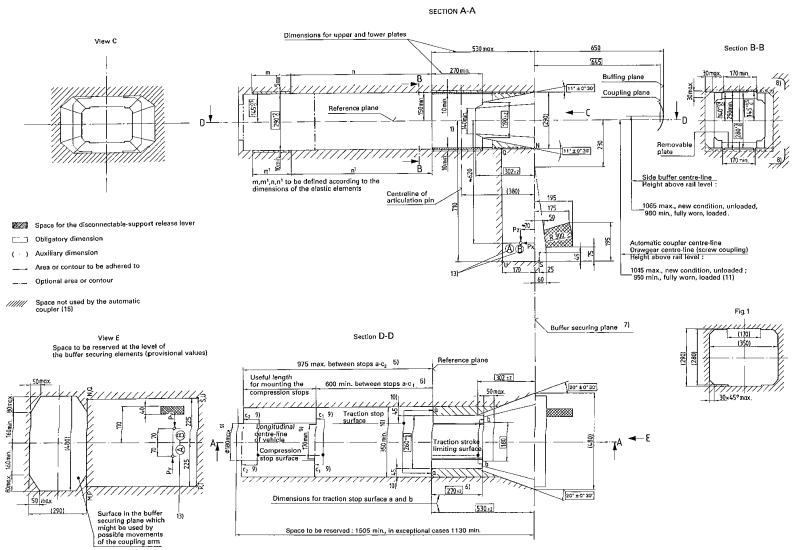


Fig.1

1-7-65

OBSERVATIONS

1) The traction stops a and b should be removable, and their removal should leave free the space shown in figure 1 between the stops a and the buffer securing plane.

2) The definition of the space to be reserved does not affect the dimensions specified for the underframe components.

3) The planes of the two stop surfaces a and of the two stop surfaces c must be between two planes running perpendicular to the centreline of the mounting recess, not further than 1.5 mm apart. In the case of welds made on the side of the contact surfaces of planes a, b and c, the weld seams must be contained within an isosceles right-angled triangle with a side not exceeding 8 mm in length.

4) The tolerances on the dimensions given in this drawing must be respected in order to ensure the correct functioning of all the components of the coupler; the manufacturers are, however, quite free to define the corresponding tolerances.

5) The distance between the surfaces of compression stops c_1 and c_2 and the surfaces of the traction stops a is defined by a dimension with a tolerance $^{0}_{-2}$.

6) The tolerance indicated, i.e. 270 ± 2 is applicable to the mounting recess. The initial dimension to be observed in the manufacture of the traction stops is 270 ± 0.5.

7) It is not essential for the buffer securing plane and the front face of the buffer beam to coincide.

8) Possible form of the mounting recess of the elastic element : R_{max} = 30 mm.

9) Concentrated central application of the compression forces is not permissible. If the surfaces of the compression stops c_1 and c_2 form a continuous plate, a suitable mounting method for the elastic element will be necessary. The continuous compression stops surfaces c_1 and c_2 may, where necessary, have in the centre an opening with a maximum diameter of 180 mm. Where the separated solution is used for the rear face of the compression stops, the distance between the stops c_1 should be at least 170 mm, and in the case of stops c_2 it should not exceed 170 mm.

10) The tolerances of the central-solebar clearance (350 mm) and the thickness of the traction stops (45 mm) are as follows :

10.1) The tolerance of the thickness of the traction stops on vehicles already fitted with solebars of 350 $^{+4}_{0}$ may vary by + 1 to − 1
The traction stops must be chosen such that the clearance between traction stops is 260 $^{+4}_{0}$.

10.2) The tolerance of the thickness of the fixed traction stops to be fitted on new vehicles may be $^{+1}_{0}$.
In this case, the clearance 260 $^{+4}_{0}$ is the reference dimension to which special attention is to be paid during manufacture, and the dimension «350 min» is replaced by the dimension 353 ± 3.

10.3) When removable traction stops are used, the dimension «350 min» outside the positioning zone of the traction stops on new vehicles is likewise to be replaced by the dimension 353 ± 3.
The clearance between the inner solebars, in the positioning zone of the removable traction stops, and its tolerance depend on the profile selected for the removable traction stops.
In this case, the dimension to which special attention is to be paid during manufacture is 260 $^{+4}_{0}$.

11) The maximum difference in height between the «new condition, unloaded» and the «fully worn condition, loaded» should not, however, exceed 85 mm for a given vehicle, in accordance with RIC provisions.

12) Permissible tolerances on dimensions where no tolerances are specified, according to UIC Leaflet 800-50 and OSJD 840-2.

13) Points of application of forces A and B for transmitting the telescopic-leg suspension loads Px = 8500 N, Py = 3000 N, Pz = 10500 N.
For the load assumption, the force components Px, Py and Pz of the suspension load P should be applied either to Point A or to point B.

14) Free space MNPQ-RSTU for installing the telescopic-leg suspension support.

15) The space not used by the automatic coupler is the space needed neither to assemble and remove the coupler nor to enable it and its additional devices to operate.

SPACE TO BE RESERVED ON THE COACH FOR : SUSPENSION VARIANT 2 (TELESCOPIC-LEG SUSPENSION), GATHERING RANGE OF THE COUPLING ARM, ARTICULATION, ELASTIC ELEMENT (REMOVED FROM THE FRONT AND FROM BELOW) (SOLUTION WITH COMPRESSION AND TRACTION STOPS)

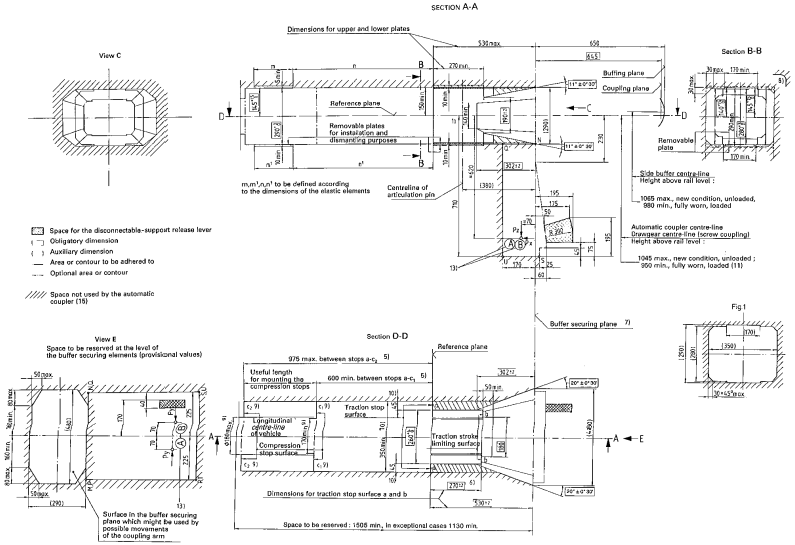


Fig.1

OBSERVATIONS

1) The traction stops a and b should be removable, and their removal should leave free the space shown in figure 1 between the stops a and the buffer securing plane.

2) The definition of the space to be reserved does not affect the dimensions specified for the underframe components.

3) The planes of the two stop surfaces a and of the two stop surfaces c must be between two planes running perpendicular to the centreline of the mounting recess, not further than 1.5 mm apart. In the case of welds made on the side of the contact surfaces of planes a, b and c, the weld seams must be contained within an isosceles right-angled triangle with a side not exceeding 8 mm in length.

4) The tolerances on the dimensions given in this drawing must be respected in order to ensure the correct functioning of all the components of the coupler; the manufacturers are, however, quite free to define the corresponding tolerances.

5) The distance between the surfaces of compression stops c_1 and c_2 and the surfaces of the traction stops a is defined by a dimension with a tolerance $^{0}_{-2}$.

6) The tolerance indicated, i.e. 270 ± 2 is applicable to the mounting recess. The initial dimension to be observed in the manufacture of the traction stops is 270 ± 0.5.

7) It is not essential for the buffer securing plane and the front face of the buffer beam to coincide.

8) Possible form of the mounting recess of the elastic element : R_{max} = 30 mm.

9) Concentrated central application of the compression forces is not permissible. If the surfaces of the compression stops c_1 and c_2 form a continuous plate, a suitable mounting method for the elastic element will be necessary. The continuous compression stops surfaces c_1 and c_2 may, where necessary, have in the centre an opening with a maximum diameter of 180 mm. Where the separated solution is used for the rear face of the compression stops, the distance between the stops c_1 should be at least 170 mm, and in the case of stops c_2 it should not exceed 170 mm.

10) The tolerances of the central-solebar clearance (350 mm) and the thickness of the traction stops (45 mm) are as follows :

10.1) The tolerance of the thickness of the traction stops on vehicles already fitted with solebars of $350\ ^{+4}_{0}$ may vary by + 1 to − 1.
The traction stops must be chosen such that the clearance between traction stops is $260\ ^{+4}_{0}$.

10.2) The tolerance of the thickness of the fixed traction stops to be fitted on new vehicles may be $^{+1}_{0}$.
In this case, the clearance $260\ ^{+4}_{0}$ is the reference dimension to which special attention is to be paid during manufacture, and the dimension ≈350 mm is replaced by the dimension 353 ± 3.

10.3) When removable traction stops are used, the dimension ≈350 mm outside the positioning zone of the traction stops on new vehicles is likewise to be replaced by the dimension 353 ± 3.
The clearance between the inner solebars, in the positioning zone of the removable traction stops, and its tolerance depend on the profile selected for the removable traction stops.
In this case, the dimension to which special attention is to be paid during manufacture is $260\ ^{+4}_{0}$.

11) The maximum difference in height between the new condition, unloaded and the efully worn condition, loaded should not, however, exceed 85 mm for a given vehicle, in accordance with RIC provisions.

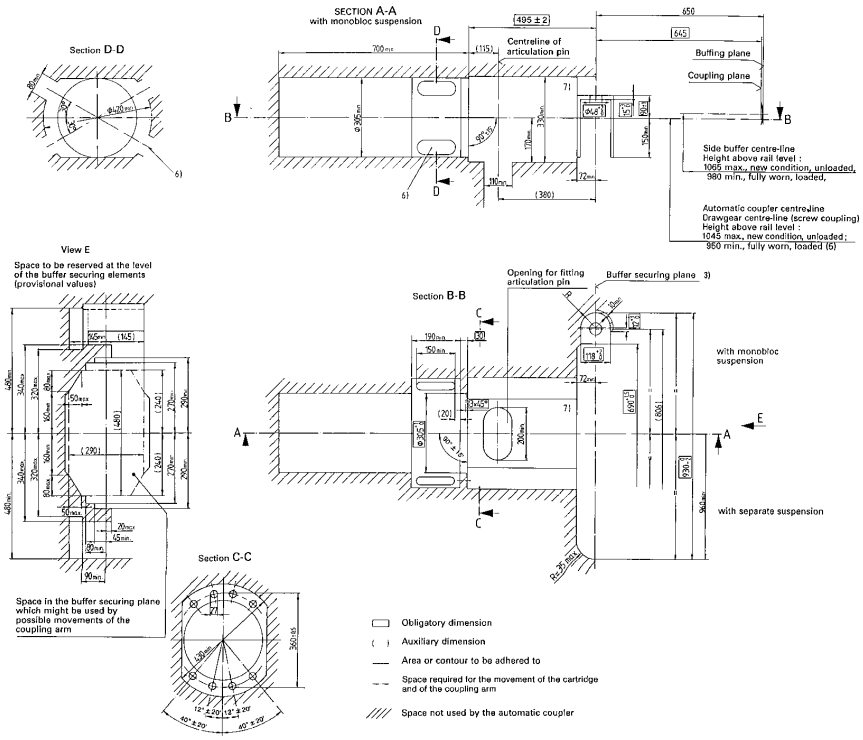
12) Permissible tolerances on dimensions where no tolerances are specified, according to UIC Leaflet 800-50 and 0530 540-2.

13) Points of application of forces A and B for transmitting the telescopic-leg suspension loads Px = 8500 N, Py = 3000 N, Pz = 10500 N.
For the load assumption, the force components Px, Py and Pz of the suspension load P should be applied either to Point A or to point B.

14) Free space MNPQ-RSTU for installing the telescopic-leg suspension support.

15) The space not used by the automatic coupler is the space needed neither to assemble and remove the coupler nor to enable it and its additional devices to operate.

SPACE TO BE RESERVED ON THE COACH FOR : SUSPENSION VARIANT 1 (CROSS-BEAM SUSPENSION), GATHERING RANGE OF THE COUPLING ARM, ARTICULATION, ELASTIC ELEMENT (FLANGED SOLUTION)



OBSERVATIONS

1) The definition of the space to be reserved does not affect the dimensions specified for the underframe components.

2) The tolerances on the dimensions given in this drawing must be respected in order to ensure the correct functioning of all the components of the coupler; the manufacturers are, however, quite free to define the corresponding tolerances.

3) It is not essential for the buffer securing plane and the front face of the buffer beam to coincide.

4) Permissible tolerances on dimensions where no tolerances are specified, according to UIC Leaflet 800-50 and OSJD 840-2 ..

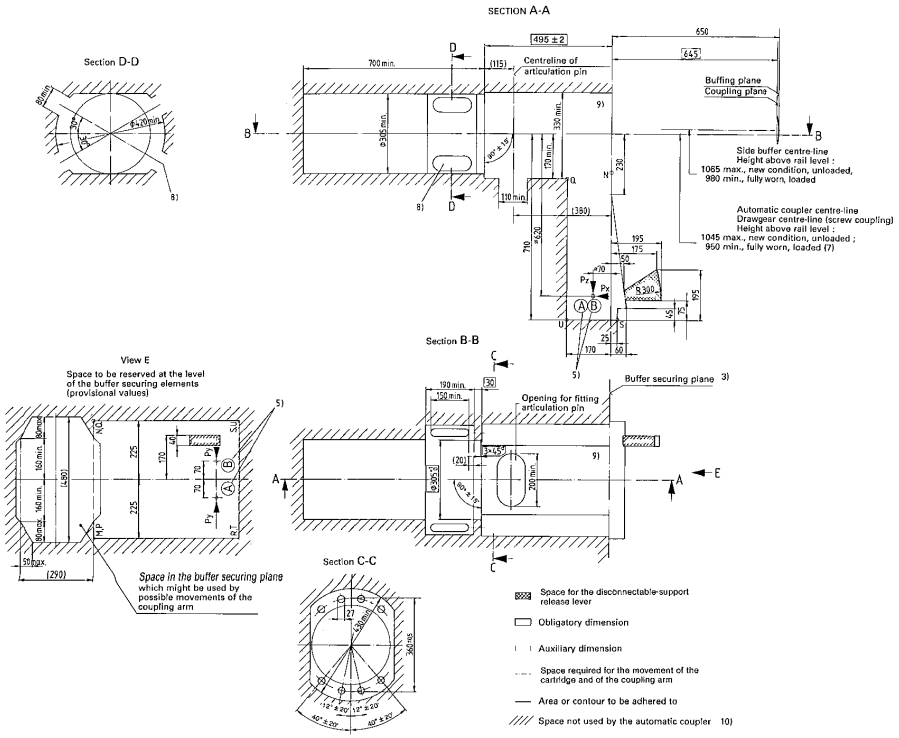
5) The maximum difference in height between the "new condition, unloaded" and the "fully worn condition, loaded" should not, however, exceed 85 mm for a given vehicle, in accordance with RIC provisions.

6) Orifices for installing the flange-securing bolts.

7) Space to be reserved for the coupling arm according to the angles indicated in Appendix 7.

8) The space not used by the automatic coupler is the space needed neither to assemble and remove the coupler nor to enable it and its additional devices to operate.

SPACE TO BE RESERVED ON THE COACH FOR : SUSPENSION VARIANT 2 (TELESCOPIC-LEG SUSPENSION), GATHERING RANGE OF THE COUPLING ARM, ARTICULATION, ELASTIC ELEMENT (FLANGED SOLUTION)



1-7-85

OBSERVATIONS

1) The definition of the space to be reserved does not affect the dimensions specified for the underframe components.

2) The tolerances on the dimensions given in this drawing must be respected to ensure the correct functioning of all the components of the coupler, the manufacturers are, however, quite free to define the corresponding tolerances.

3) It is not essential for the buffer securing plane and the front face of the buffer beam to coincide.

4) Permissible tolerances on dimensions where no tolerances are specified, according to UIC Leaflet 800-50 and OSJD 840-2 ..

5) Points of application of forces A and B for taking the telescopic-leg suspension loads
P_x = 8500 N, P_y = 3000 N, P_z = 10500 N.

6) Free space MNPQI-RSTU for installing the telescopic-leg suspension support.

7) The maximum difference in height between the "new condition, unloaded" and the "fully worn condition, loaded" should not, however, exceed 85 mm for a given vehicle, in accordance with RIC provisions.

8) Orifices for installing the flange-securing bolts.

9) Space to be reserved for the coupling arm according to the angles indicated in Appendix 7.

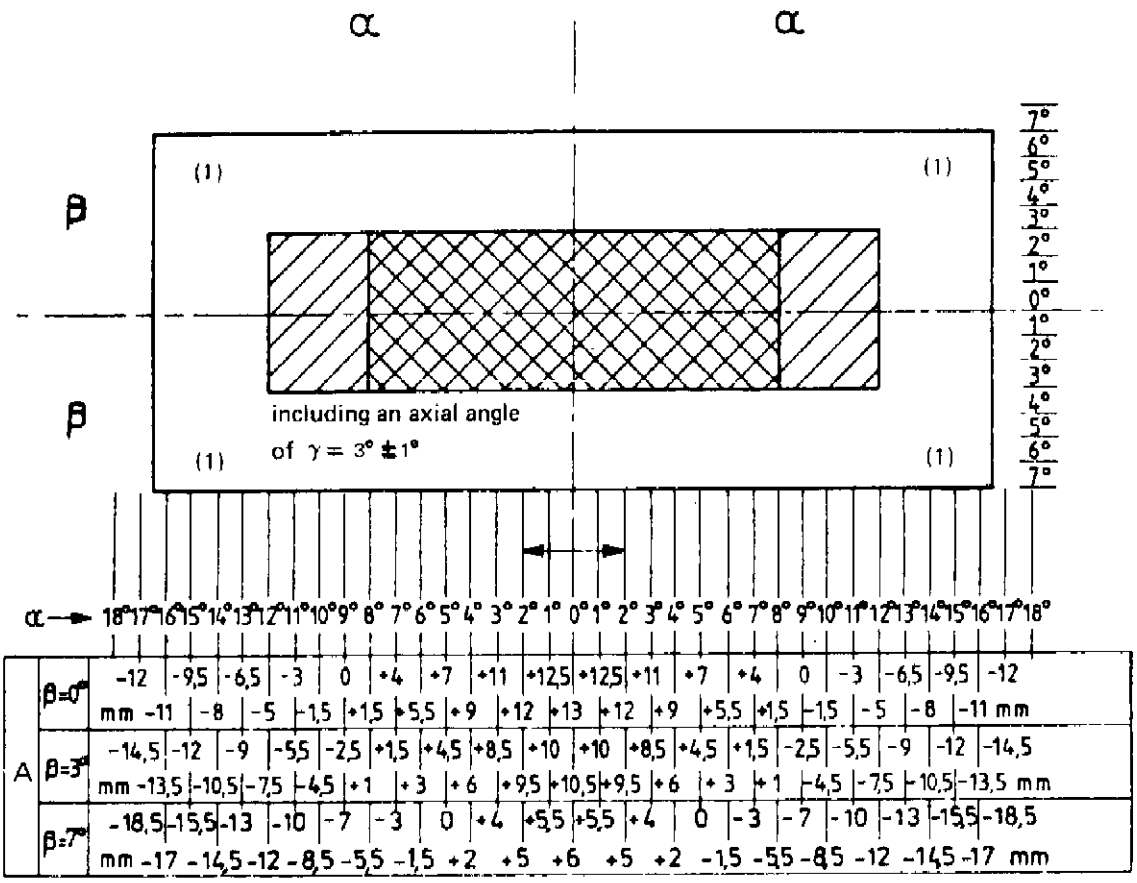
10) The space not used by the automatic coupler is the space needed neither to assemble and remove the coupler nor to enable it and its additional devices to operate.

SPACE REQUIREMENT FOR TWO COUPLER BODIES COUPLED TOGETHER IN THE NORMAL POSITION

(To be provided)

BASIC CONDITIONS RELATING TO THE SPACE TO BE RESERVED IN FRONT OF THE BUFFER SECURING PLANE

Angular deflections of the coupling arm



A																			
	β=0°	-12	-9,5	-6,5	-3	0	+4	+7	+11	+12,5	+12,5	+11	+7	+4	0	-3	-6,5	-9,5	-12
		mm -11	-8	-5	-1,5	+1,5	+5,5	+9	+12	+13	+12	+9	+5,5	+1,5	-1,5	-5	-8	-11 mm	
	β=3°	-14,5	-12	-9	-5,5	-2,5	+1,5	+4,5	+8,5	+10	+10	+8,5	+4,5	+1,5	-2,5	-5,5	-9	-12	-14,5
		mm -13,5	-10,5	-7,5	-4,5	+1	+3	+6	+9,5	+10,5	+9,5	+6	+3	+1	-4,5	-7,5	-10,5	-13,5 mm	
	β=7°	-18,5	-15,5	-13	-10	-7	-3	0	+4	+5,5	+5,5	+4	0	-3	-7	-10	-13	-15,5	-18,5
		mm -17	-14,5	-12	-8,5	-5,5	-1,5	+2	+5	+6	+5	+2	-1,5	-5,5	-8,5	-12	-14,5	-17 mm	

Table B below indicates the stroke of the coupler head

B		Compression	Traction
	Cross-hatched area	105 mm	50 mm
	Hatched area	80 mm (2)	50 mm
	Non-hatched area	50 mm	50 mm

(1) If extender elements in the form of side buffers are used, in accordance with Leaflet «Elastic system : coaches», the horizontal angle is theoretically smaller; tests have shown, however, that this angle may be obtained.

(2) Provisional value.

BASIC CONDITIONS RELATING TO THE SPACE TO BE RESERVED IN FRONT OF THE BUFFER SECURING PLANE

To obtain the corresponding stroke of the thrust plate, the values specified below need to be deduced from the values indicated in table B :

a) Articulation according to Appendix 4 of UIC 523, OSJD 522-4: Values in accordance with the relevant angle in table A.

b) Articulation according to Appendix 5 of UIC 523, OSJD 522-4: in the event of elastic elements being used whose components for transmitting compressive and tensile loads to the coupler form a single unit. Values :

$\beta = 0° : X \geqslant + 8$ mm
$\beta = 3° : X \geqslant + 5.5$ mm
$\beta = 7° : X \geqslant 0$ mm
} articulation play

c) Articulation according to Appendix 5 of UIC 523, OSJD 522-4: in the event of elastic elements being used which have separate components for transmitting compressive and tensile loads to the coupler. Values :

$\beta = 0° : X \geqslant + 4$ mm
$\beta = 3° : X \geqslant + 2$ mm
$\beta = 7° : X \geqslant - 4$ mm
} articulation play

BASIC CONDITIONS RELATING TO THE SPACE TO BE RESERVED IN FRONT OF THE BUFFER SECURING PLANE

The definitions in Appendix 7.1 correspond to the following conditions :

1) Running between straight section and 150 m radius curve (without any transition section) of coach in question coupled to an open goods wagon in accordance with UIC Leaflet 571-1, chapter II (distance between articulation centres : c = 8 m; wheelbase a = 5.4 m; total transverse play q = 0.050 m with k = 1) with a vertical coupling angle of 3° and a stroke of 50 mm in compression and 50 mm in tension (stroke of coupling head).

2) Running between 150 m curve, 5.20 m straight section and 150 m reverse curve, by coach in question coupled to a type X coach in accordance with UIC Leaflet 567-1 with a vertical coupling angle of 3° and a stroke of 50 mm in compression and 50 mm in tension (stroke of coupling head).

3) Running onto a ferryboat in accordance with RIC conditions (150 m curve, angle formed by ferryboat and access ramp 2.5°; study using the following parameters : 150 m curve/13.8 m straight section/153.8 m reverse curve) by the coach in question coupled between a two-axled open wagon (UIC Leaflet 571-1, chapter II) and a type X coach (UIC Leaflet 567-1) with a vertical coupling angle of 7°, an axial angle of 3° ± 1° and a stroke of 50 mm in compression and 50 mm in tension (stroke of coupling head).

4) Running between straight section and R = 250 m curve (without any transition section) by coach in question coupled to a two-axled open wagon in accordance with UIC Leaflet 571-1, chapter II, with a vertical coupling angle of 3° and a stroke of 80 mm (1) in compression and 50 mm in tension (stroke of coupling head).

---

(1) Provisional value.

5) Running between straight section and R = 400 m curve (without any transition section) by the coach in question, coupled to a two-axled open wagon in accordance with UIC Leaflet 571-1, chapter II, with a vertical coupling angle of 3° and a stroke of 105 mm in compression and 50 mm in tension (stroke of coupling head).

Conditions 1) to 5) are based on the maximum possible lateral play of $q_1 + q_2$.

Appendix 7.1 contains the limiting conditions imposed by construction and installation for the horizontal and vertical deflections of the centreline of the coupler and also the corresponding permissible strokes (including the corrections to be made in order to take into account the play in the articulations) in the most unfavourable case.

To define the lateral space required in front of the buffer securing plane for the coupler deflections, it is necessary to take from appendix 6, the space required by two couplers connected together.

LOCK CONTROL FOR AUTOMATIC COUPLER

(to be provided)

COCK OPERATING

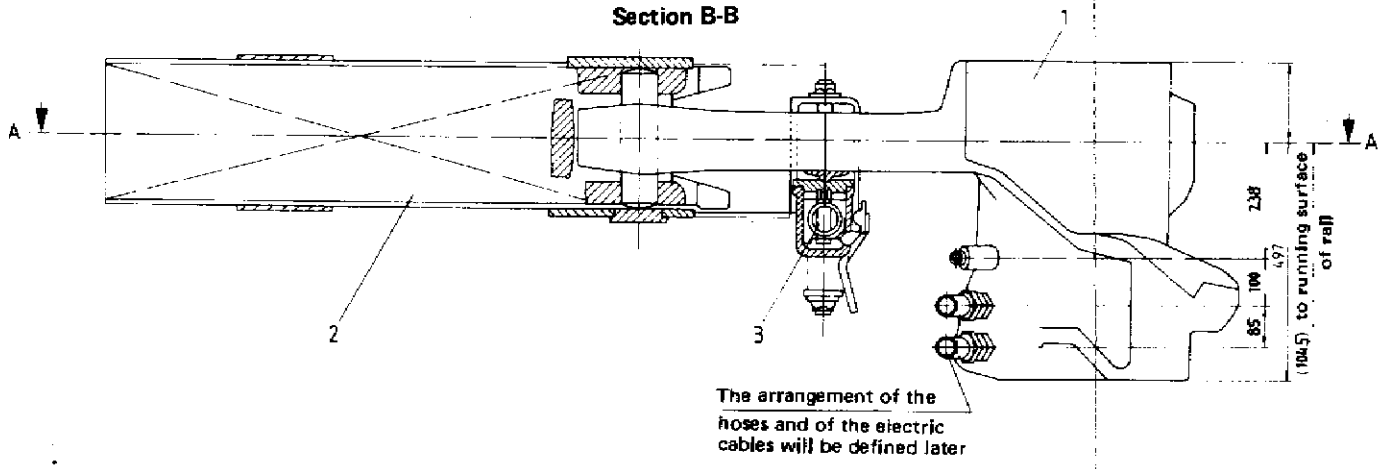
(to be provided)

MOUNTING OF AUTOMATIC COUPLER WITH TRACTION AND COMPRESSION STOPS AND WITH CROSS-BEAM SUSPENSION

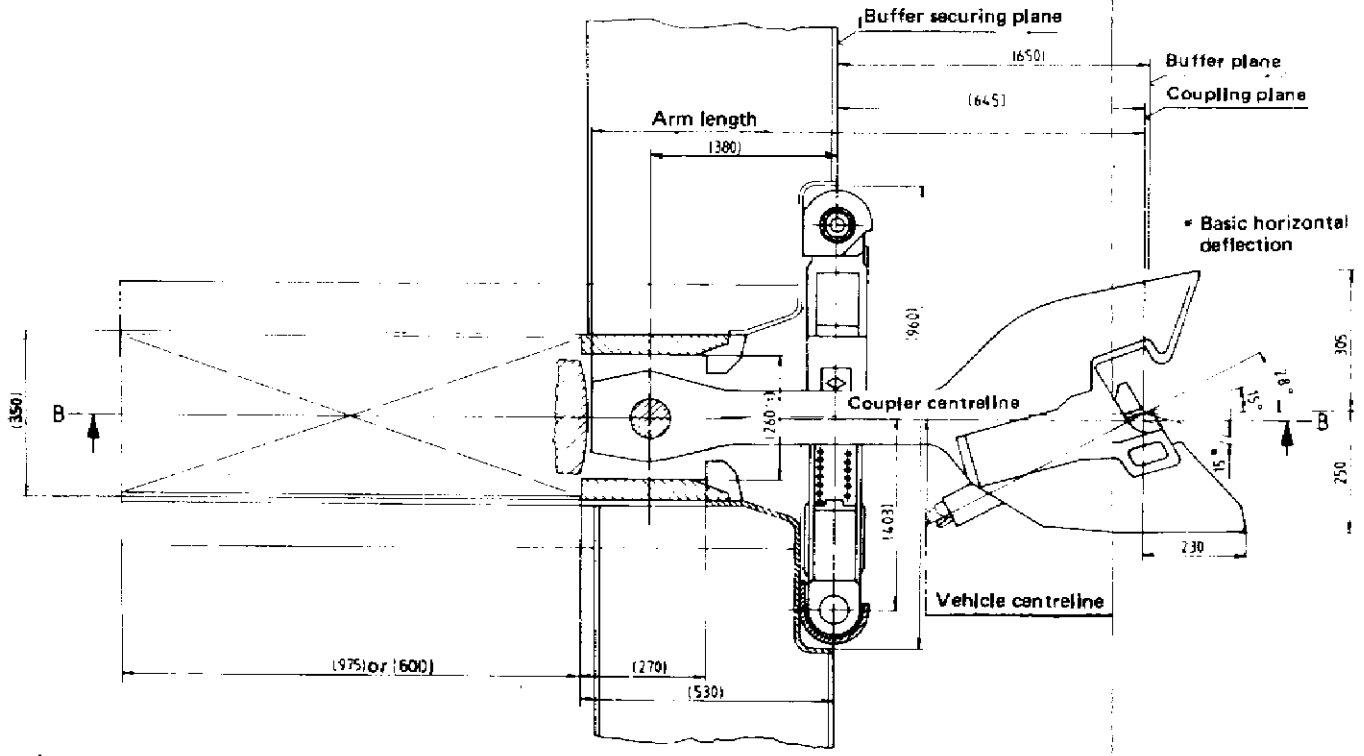
(This appendix is for information only. The dimensions given in parenthesis are taken from Appendix 2)

Serial No.	Designation
3	Cross-beam suspension
2	Elastic element
1	Coupler body

Section B-B



Section A-A

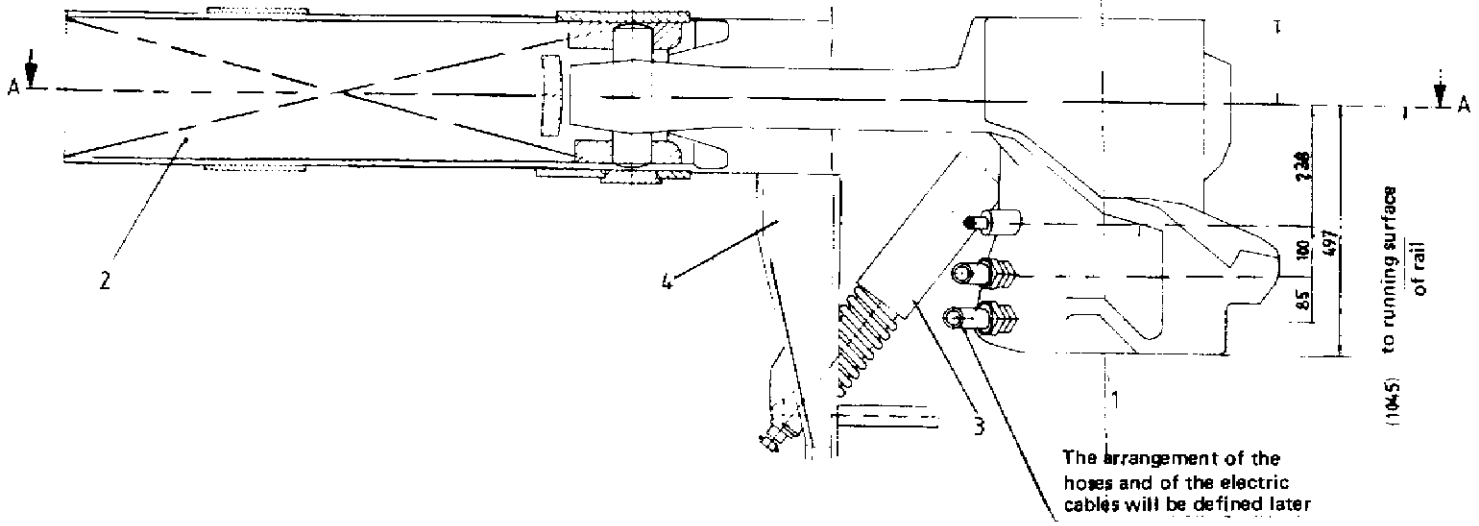


MOUNTING OF AUTOMATIC COUPLER WITH TRACTION AND COMPRESSION STOPS AND WITH TELESCOPIC-LEG SUSPENSION

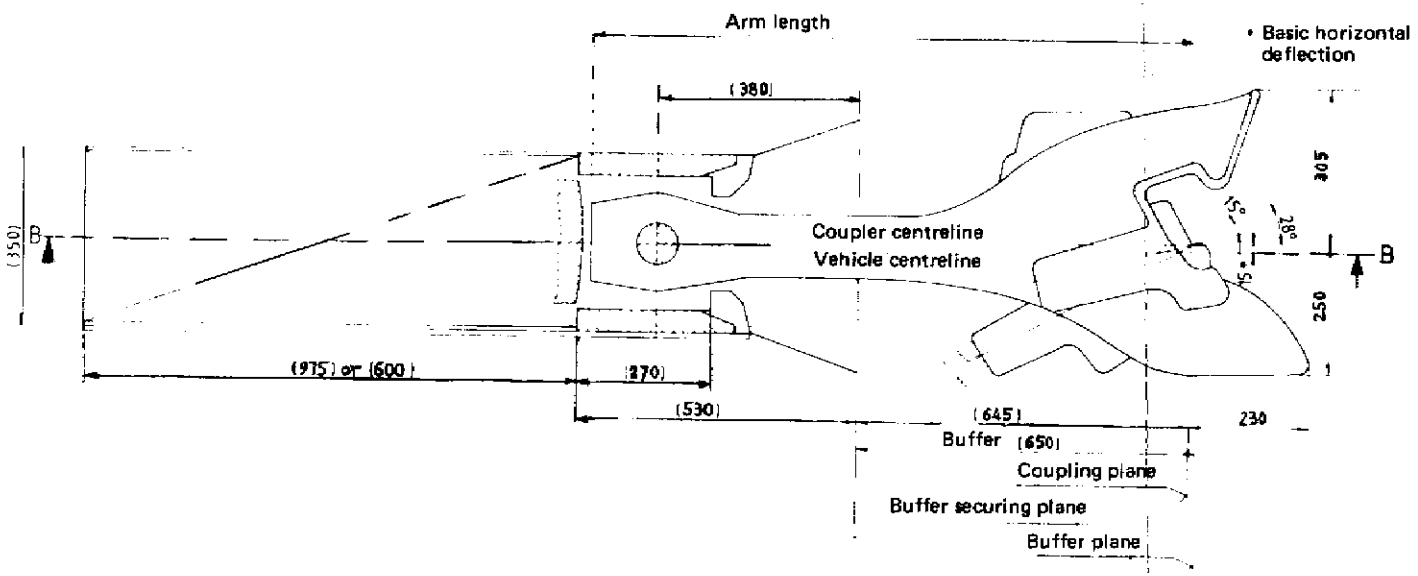
(This appendix is for information only. The dimensions given in parenthesis are taken from Appendix 3)

Serial No.	Designation
4	Support bracket
3	Telescopic-leg suspension
2	Elastic element
1	Coupler body

Section B-B



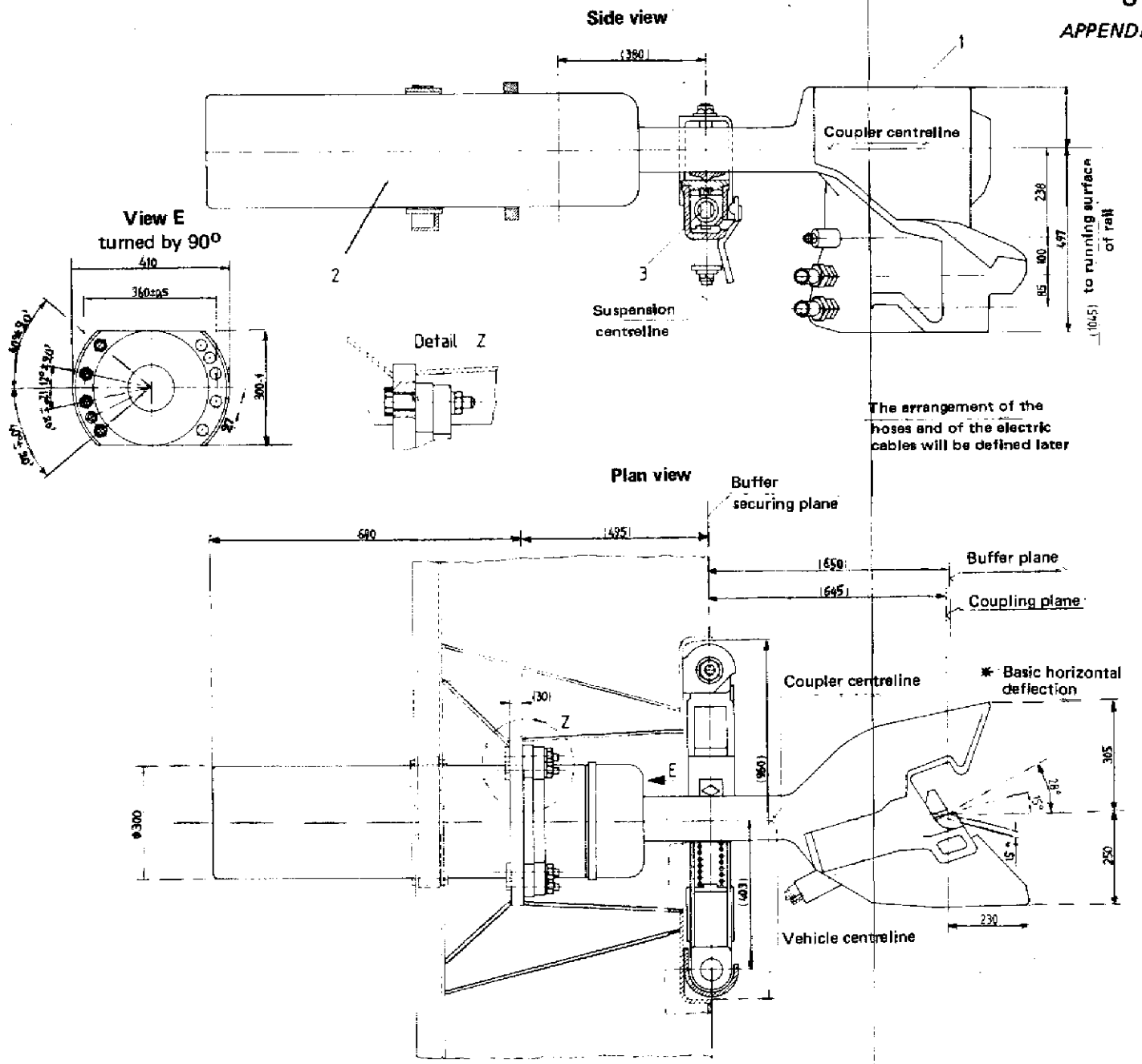
Section A-A



MOUNTING OF AUTOMATIC COUPLER WITH FLANGE SOLUTION AND WITH CROSS-BEAM SUSPENSION

(This appendix is for information only. The dimensions in parenthesis are taken from Appendix 4)

Serial No.	Designation
3	Cross-beam suspension
2	Elastic element
1	Coupler body

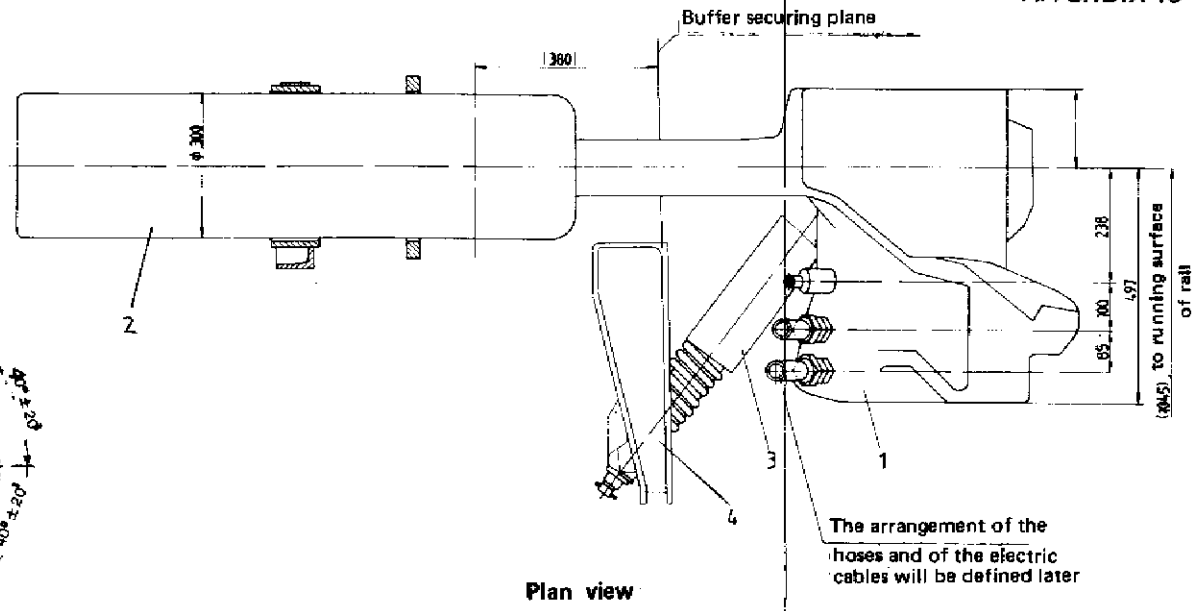


MOUNTING OF THE AUTOMATIC COUPLER WITH FLANGE SOLUTION AND TELESCOPIC-LEG SUSPENSION

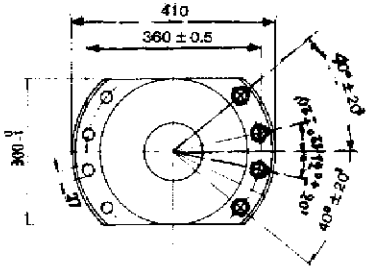
(This appendix is for information only. The dimensions in parenthesis are taken from Appendix 5)

Serial No.	Designation
4	Support bracket
3	Telescopic-leg suspension
2	Elastic element
1	Coupler body

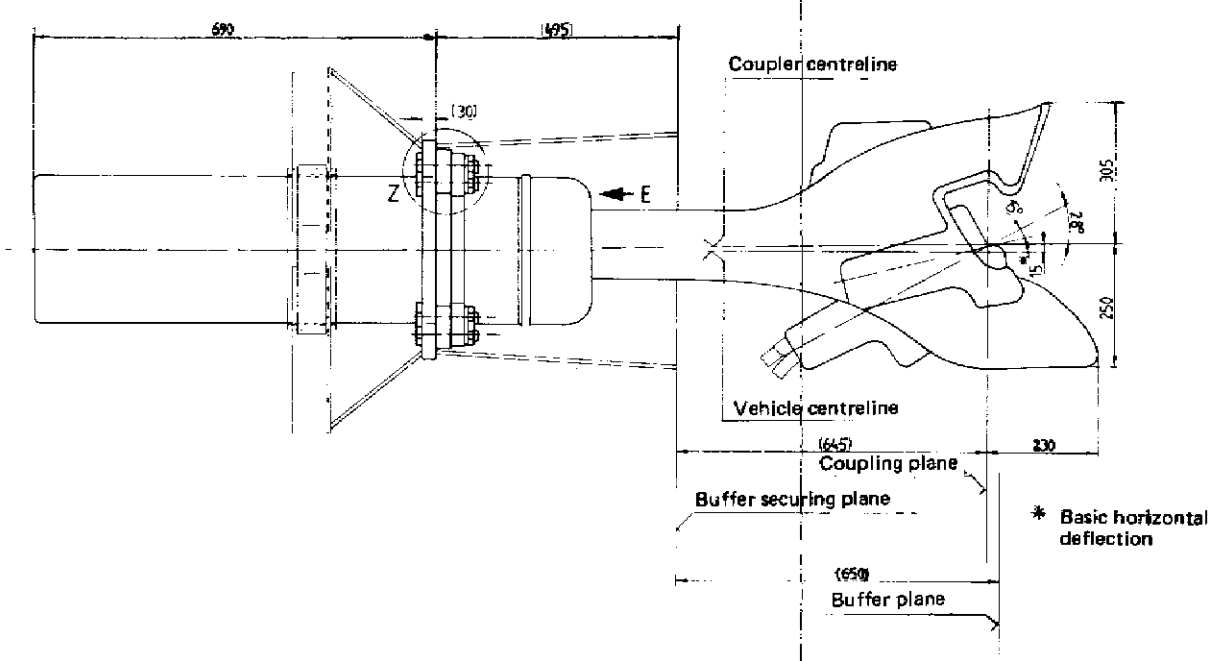
Side view



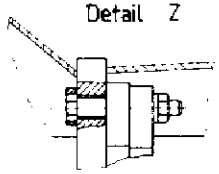
View E
turned by 90°



Plan view



Detail Z



PRINCIPAL DIMENSIONS FOR THE INTERCHANGEABILITY OF THE ELASTIC ELEMENT FOR COACHES

Section A-A

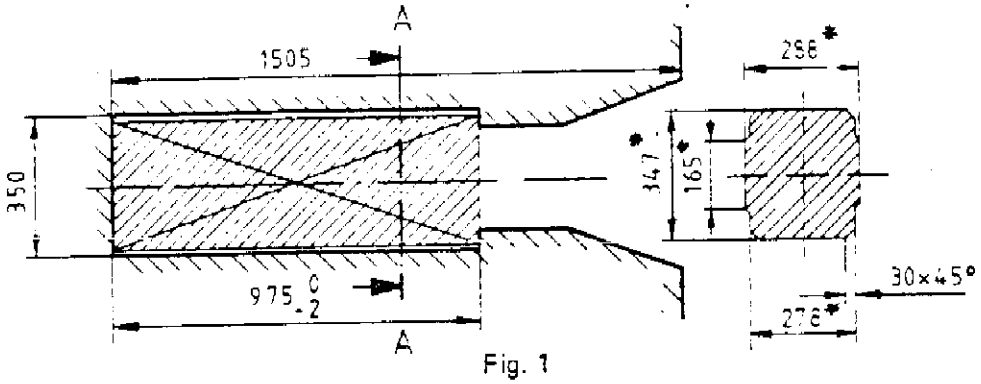


Fig. 1

Section A-A

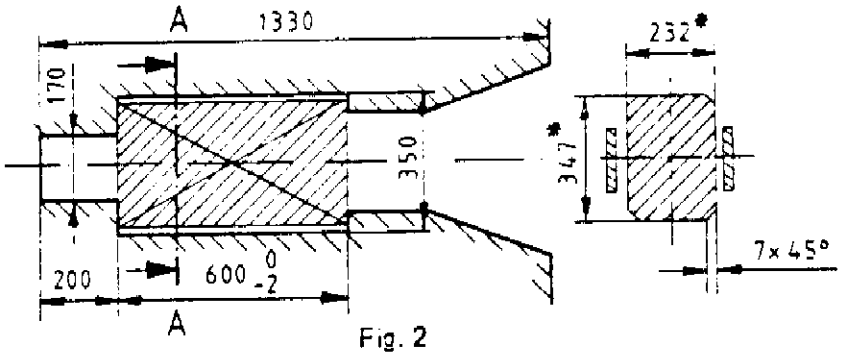


Fig. 2

Section A-A

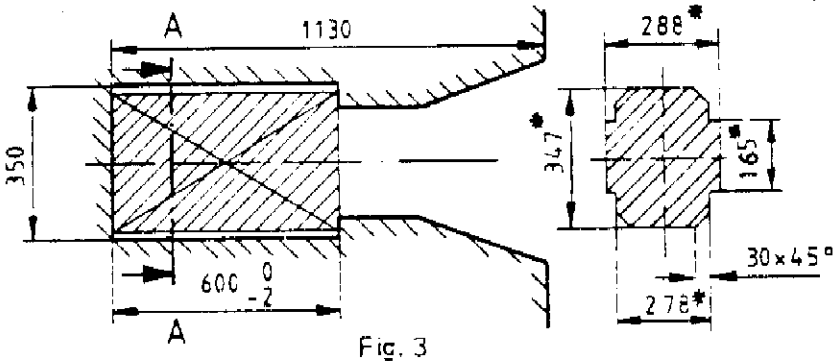


Fig. 3

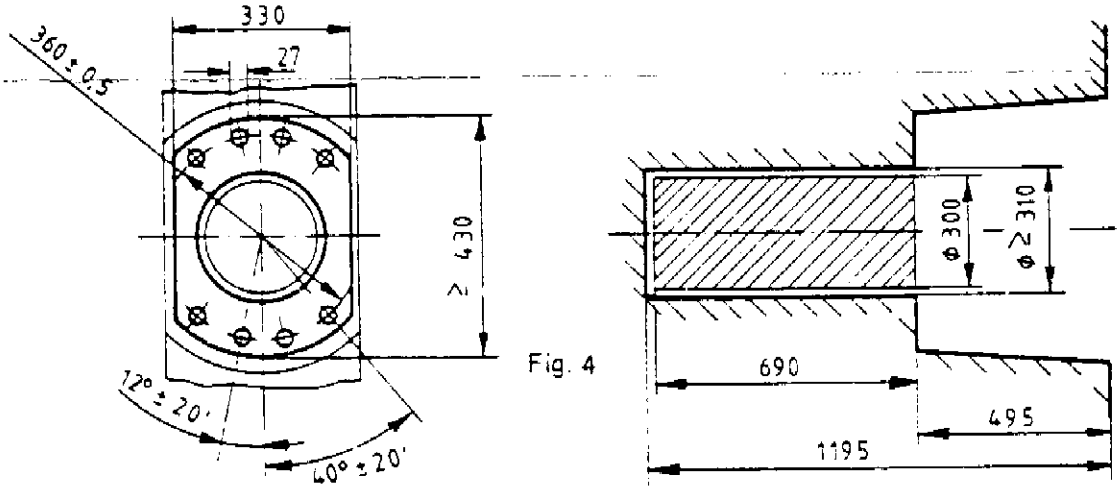
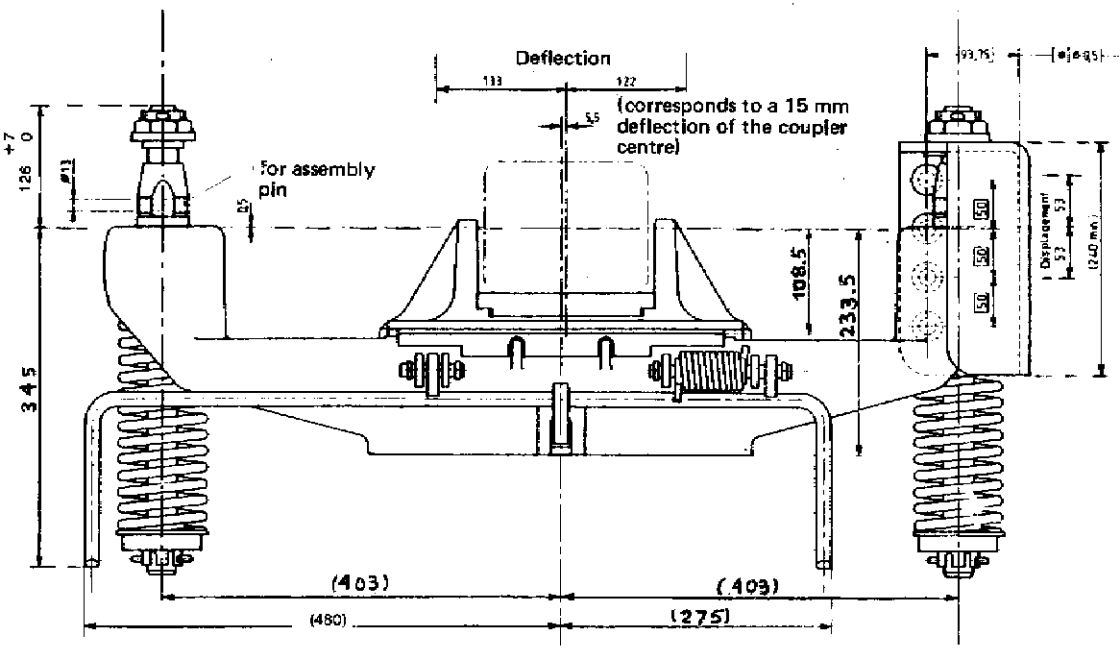
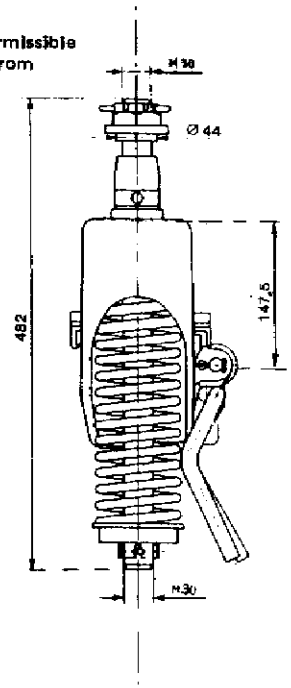


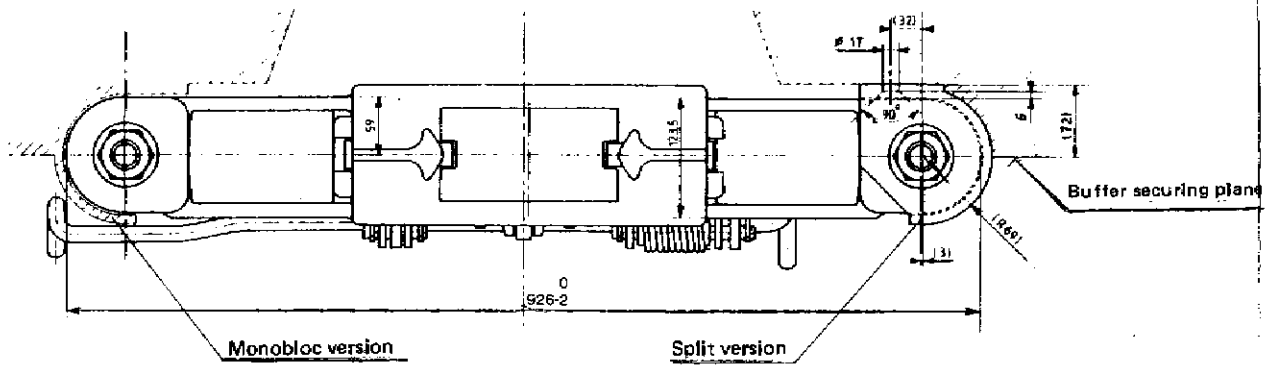
Fig. 4

(*) Dimensions marked with an asterisk may be smaller provided that the conditions specified in Leaflet 524 (UIC) 528-1 (OSJD) concerning functioning and strength, and the provisions of 2,5 of that leaflet are satisfied.

SUSPENSION - VARIANT 1 (Cross-beam suspension)



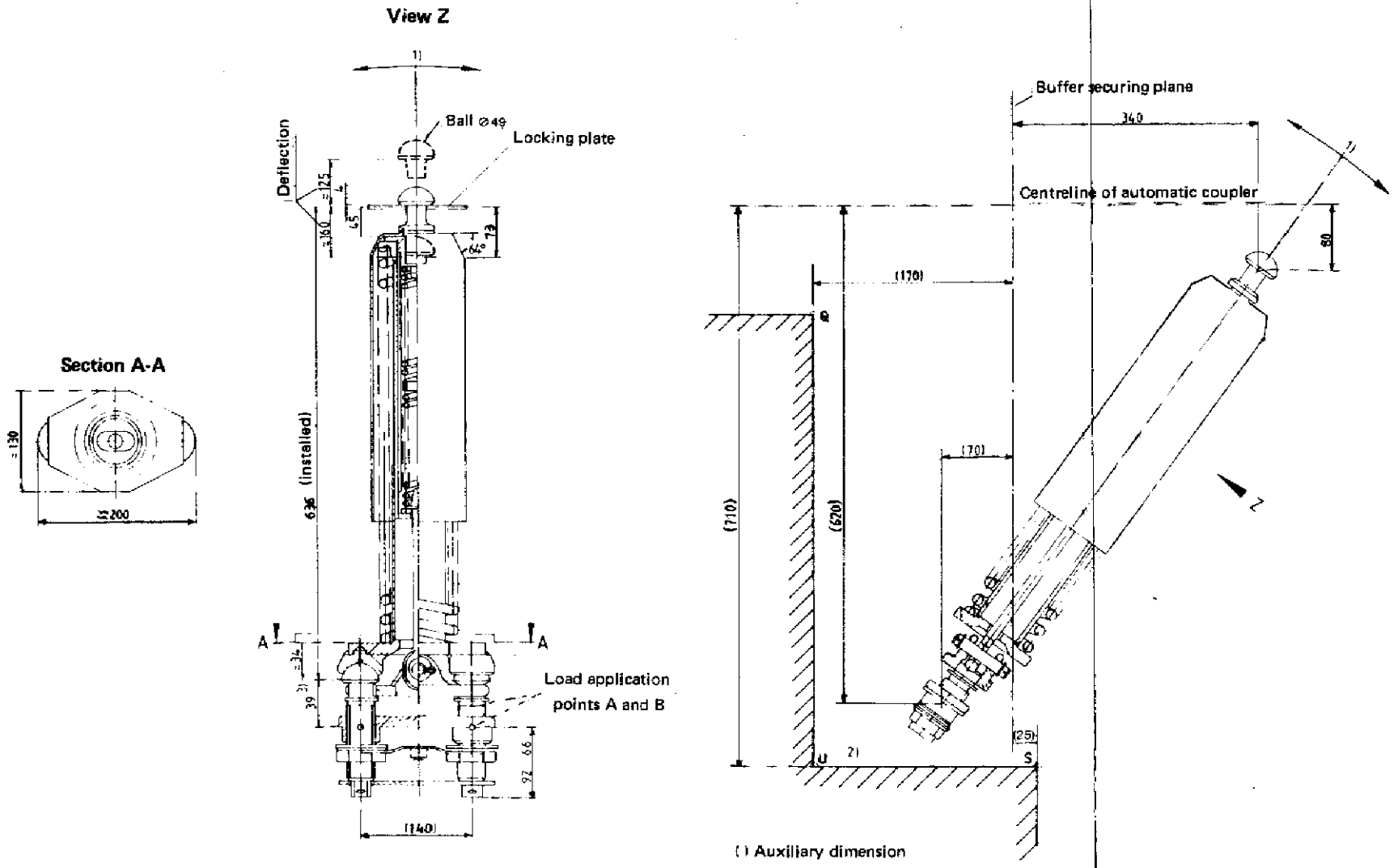




( ) Auxiliary dimension

☐ Compulsory dimension

SUSPENSION - VARIANT 2 (Telescopic-leg suspension)



1) The angular range of the telescopic-leg suspension is to be calculated (see appendix 7)
2) The space QUS is to be left free for the support bracket of the telescopic-leg (for further details see Appendices 3 and 5)
3) Regulation range $^{+\ 14}_{-\ 12}$ mm

APPLICATION

As from 1 January 1983.

All railways in the Union.

RECORD REFERENCES

Headings under which the question has been dealt with :

- Question 45/A/FIC - UIC Leaflet 567-3 "Constructional arrangements on coaches with a view to the application of the automatic coupler on the member railways of the UIC and on the member railways of the OSJD".

(Joint Subcommittee for Coaches : Paris, January 1982, January 1985).