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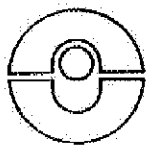
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4th edition, 1.1.82

Brake parts

Interchangeability

**NUMERISATION DANS
L'ETAT DU DOCUMENT**



International Union of Railways

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-2-

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Leaflet to be classified in volume:

V - Transport stock

Amendments

1	1.7.83
2	1.1.89
3	1.7.93
4	01-01-95
	
	
	
	
	
	

Preliminary remarks:

A double line (II) in the margin denotes changes introduced on the date shown at the foot of the page.

Enforcement of this leaflet is governed by the provisions listed under "application" at the end of this document.

a) Stop cock

The stop cock handle may be placed to the right or left of the air pipe.

The overall dimensions of the stop cock mounted on vehicles equipped with the traditional draw gear is defined in Plate 1a.

The overall dimensions of the stop cock mounted on vehicles equipped with the automatic coupler is defined in Plate 1b.

The dimensions of the stop cock fitted with a spring locking device in the end positions must be in keeping with those shown on Plate 1c.

In order to obtain the interchangeability of stop cocks on vehicles equipped with the automatic coupler, the particulars given in Plate 1d must be complied with at the time when control devices are designed, it being understood that the forked lever is a component of the cock which must be changed, together with the latter, should an exchange operation occur. The layout of the control handles of the cock mounted on vehicles equipped with the automatic coupler is governed by UIC Leaflet 535-2.

b) Brake-shoe insert holders

The dimensions for the interchangeability of new brake-shoe insert holders and non-articulated double brake-shoe insert holders are defined in Plate IIa.

To prevent the brake shoe inserts from protruding beyond their holder, it is recommended that insert holders and brake triangles be replaced and repaired when any one of the limiting dimensions shown in Plate IIb is reached. The dimensions shown in the figure concern all brake-shoe insert holders.

c) Triangular brake beam

The interchangeability dimensions are defined in Plate III.

d) Brake rigging articulated joints

The dimensions defining the brake rigging articulated joints are shown in Plate IV.

e) Brake cylinders

The brake cylinders shown in Plate V shall apply to new standard wagons.

f) Brake reservoir

The permissible overall dimensions of air brake reservoirs for new wagons running under S conditions are given in Plate VI.

g) Envelope and characteristics of brake-rigging adjusters

The envelope and characteristics of brake-rigging adjusters are defined on Plate VII for forces of up to 75 kN in the brake rigging, and in Plate VIII for forces exceeding 75 kN. These particulars must be observed when new wagons are being designed.

Brake-rigging adjusters built into the wagon underframe must comply with the envelope and other minimum requirements laid down.

The serial number 1, 2 or 3 (see Plates VII and VIII) to be allocated to the corresponding wagon shall be chosen in relation to the vehicle design and to the braking devices taken into consideration in the study.

When designing wagons, allowance must be made for the fact that the position of the brake-rigging adjuster built into the underframe can change due to wear (brake shoes, brake rigging, wheel diameters) and to the passage of bogie wagons through curves and over humps. The adjuster may therefore require more space. Consequently, under all operating conditions, a 15 mm gap must be allowed between the envelope of the brake-rigging adjuster and the fixed elements of the underframe.

Clearance for the adjuster ends and brake-rigging connections must be observed on the vehicles. Pin diameters are given in Plate IV.

Because of insufficient space, no special envelope is planned for the brake-rigging adjuster in the bogie. However, in this case too it must be ensured during the study that, for all operating situations, a gap of ... mm is allowed between the brake-rigging adjuster and the constructional fixtures.

h) Cast iron brake-shoes

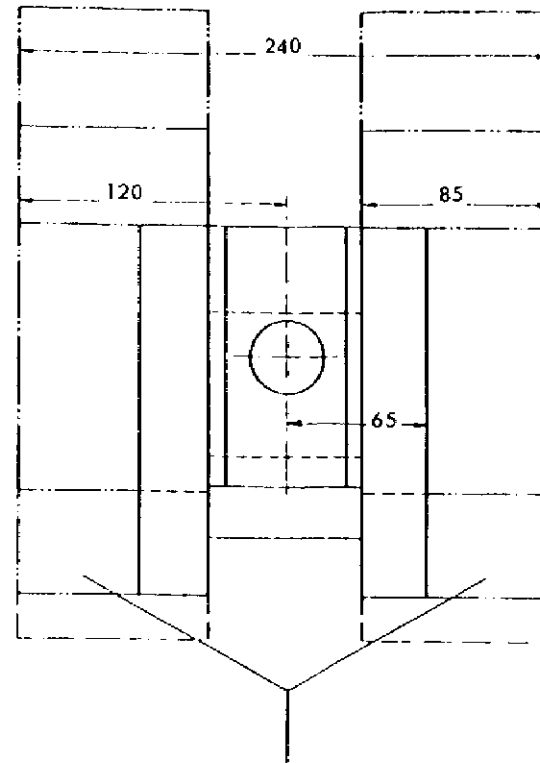
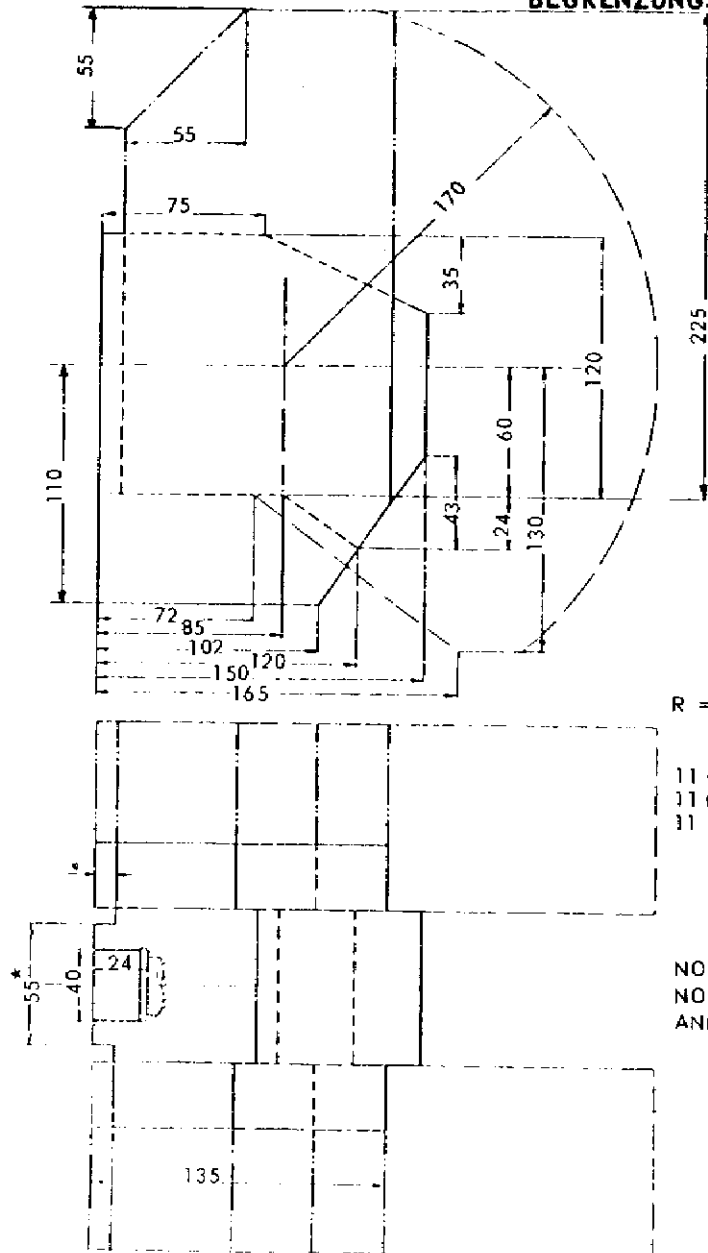
The shape of cast iron brake-shoes shall comply with Plate IX.

The instructions given in Section III of Leaflet 541-1 shall also apply to the contact surface between the insert and the insert-holder and to the cotter.

The crosswise profile of the friction surface of the insert shall be adapted to the wheel profile laid down in UIC Leaflet 510-2 and there should be a 1/40 slope ratio on the surface opposite to the flange. As an alternative to this profile, a curved transversal profile is also acceptable.

No radii shall be specified for the lengthwise profile of the friction surface of the insert. Those in common use on the railways for the different ranges of wheel diameter shall be permitted.

CROQUIS D'ENCOMBREMENT DU ROBINET DE FREIN
DIAGRAM SHOWING THE OVERALL DIMENSIONS OF THE STOP-COCK
BEGRENZUNGSLINIE DES LUFT ABSPERRHAHNS



R = 1" ou R = 1 1/4" oder

11 filets au pouce
11 threads to the inch
11 Gänge pro engl. Zoll

L'espace pour la manœuvre du robinet ne sera nécessaire que sur le côté gauche ou côté droit
The necessary space for operating the stop-cock handle is required either at left or right only
Der notwendige Raum für die Betätigung des Hahnes ist jeweils nur rechts oder links erforderlich

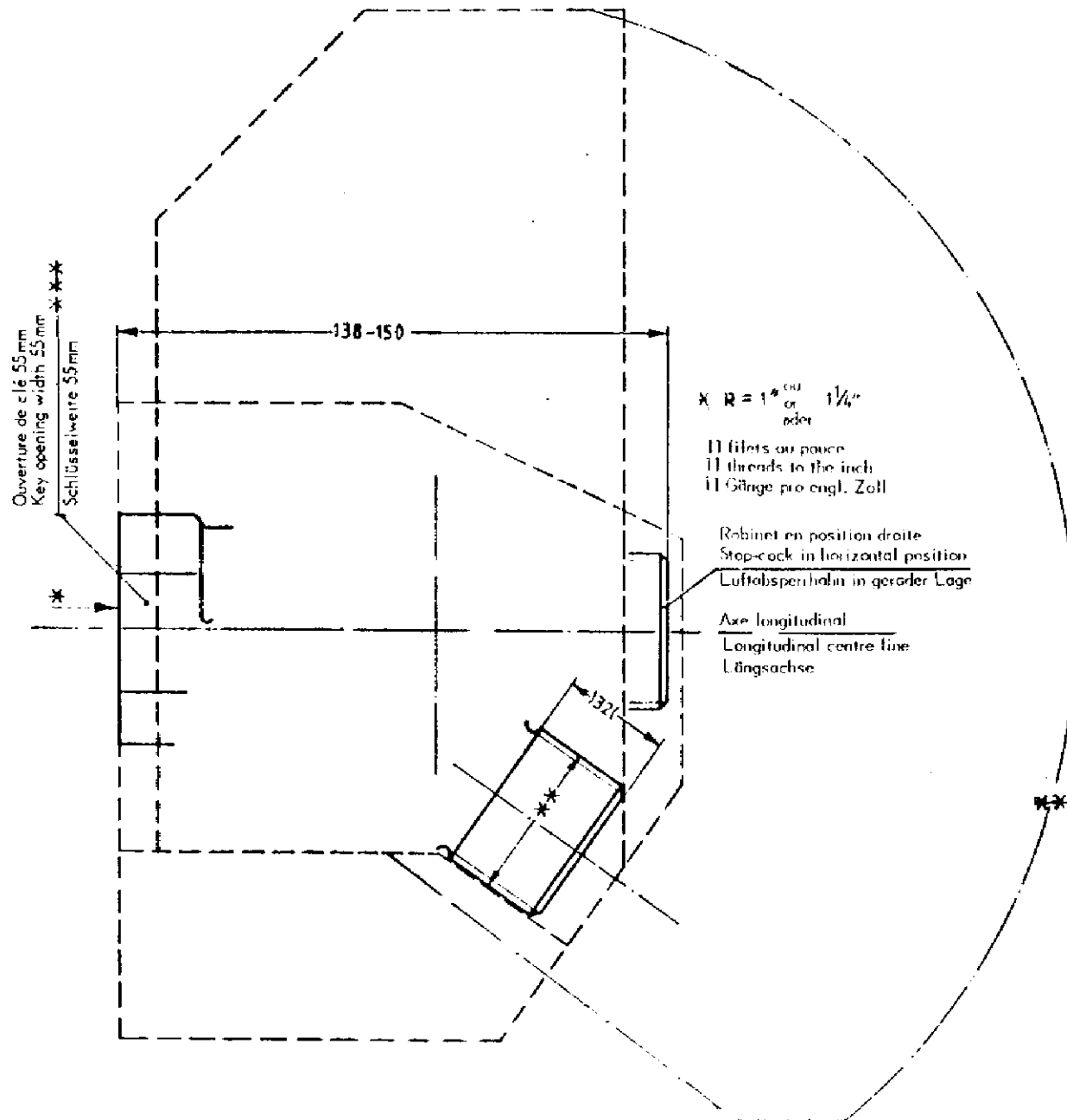
NOTA - Le tracé - - - - indique les limites de déplacement de la poignée
NOTE - The line of dashes - - - - indicates the maximum radius within which the handle can be manoeuvred
ANMERKUNG - die - - - - Linie gibt die Grenzstellung des Absperrhahns an

- - - (Cote minimum admise)
- - - (Smallest admissible dimension)
- - - (Mindestmasse)
* 60mm sont admis en variante
60mm may be used as alternative
Als Variante sind 60mm zugelassen

ROBINET D'ARRET MUNI D'UN DISPOSITIF DE BLOCAGE A RESSORTS DANS LES POSITIONS EXTREMES
 STOP-COCK FITTED WITH A SPRING LOCKING DEVICE IN THE END POSITIONS
 LUFTABSPERRHAHN MIT ARRETIERUNG IN DEN ENDSTELLUNGEN DURCH FEDERKRAFT

- 11 -

542
 PLANCHE 1c
 PLATE 1c
 TAFEL 1c



* R = 1" ^{OD} or 1 1/4" _{oder}

11 filets au pouce
 11 threads to the inch
 11 Gänge pro engl. Zoll

Robinet en position droite
 Stop-cock in horizontal position
 Luftabsperrhahn in gerader Lage

Axe longitudinal
 Longitudinal centre line
 Längsachse

** Filetage Whitworth avec filets tronqués pour tuyaux de 1 1/4" Whitworth threading with truncated threads for 1 1/4" pipes Whitworth - Gewinde mit Spitzenspiel für Rohre von 1 1/4"

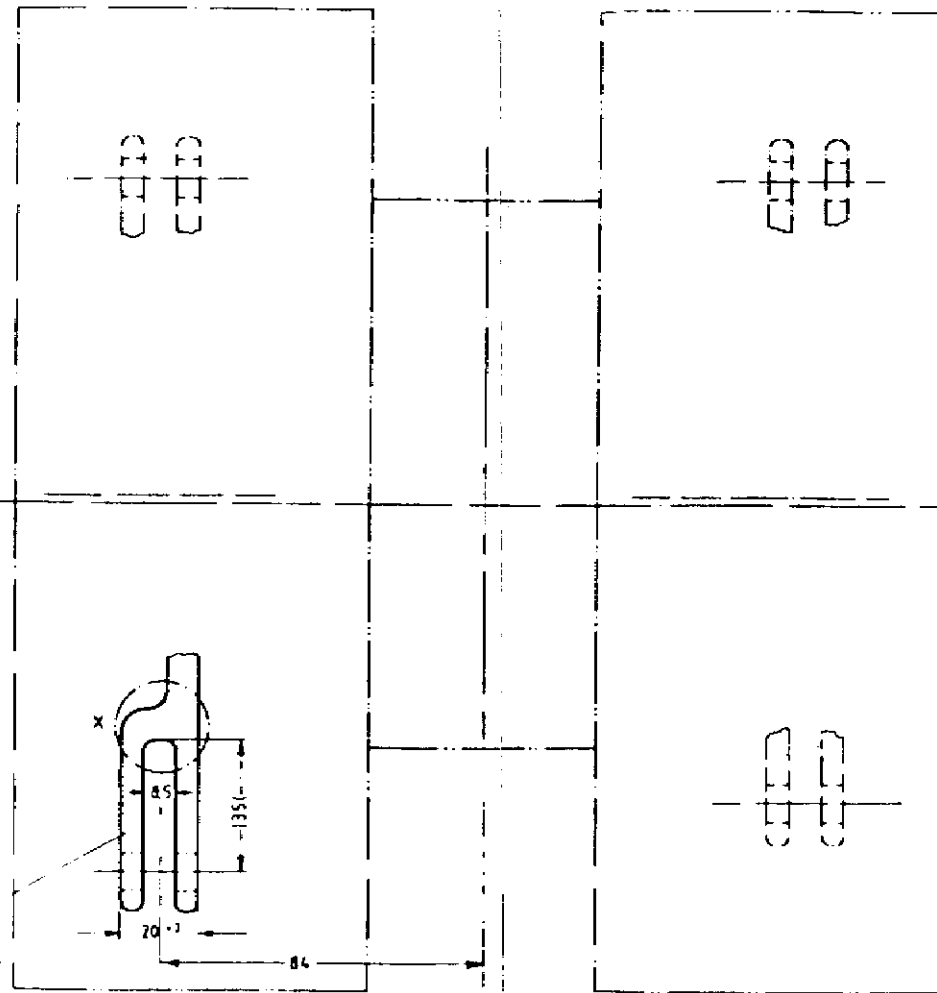
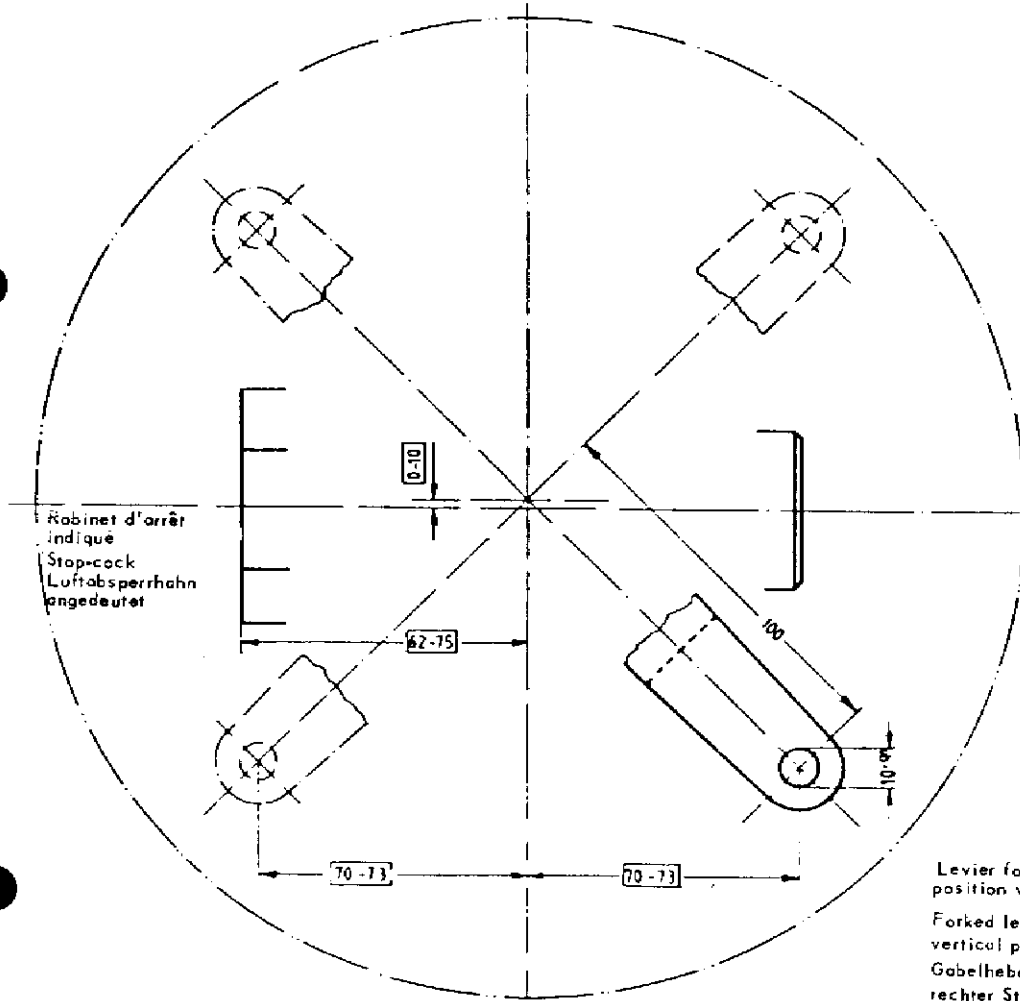
*** L'ouverture de clé de 55 mm est la valeur standard L'ouverture de 60 mm est admise en variante

The key opening width of 55 mm is the standard value The opening width of 60 mm is permitted as an alternative.

Die Schlüsselweite von 55 mm gilt als Standardabmessung Als Variante ist die Schlüsselweite von 60 mm zugelassen

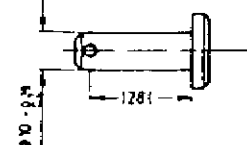
COTES DE RACCORDEMENT POUR LA COMMANDE DU ROBINET D'ARRÊT SUR VEHICULES MUNIS DE L'ATTELAGE AUTOMATIQUE
 CONNECTION DIMENSIONS FOR THE STOP-COCK CONTROLS ON VEHICLES EQUIPPED WITH THE AUTOMATIC COUPLER
 ANSCHLUSSMASSE FÜR DIE BETÄTIGUNG DER LUFTABSPERRHAHNE AN WAGEN MIT AUTOMATISCHE KUPPLUNG

PLANCHE 1d
 PLATE 1d
 TAFEL 1d

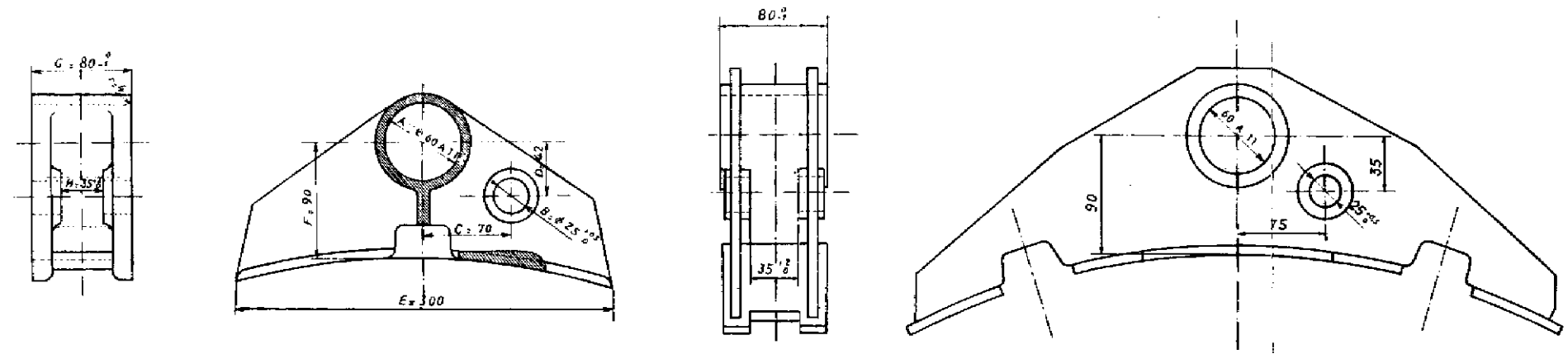


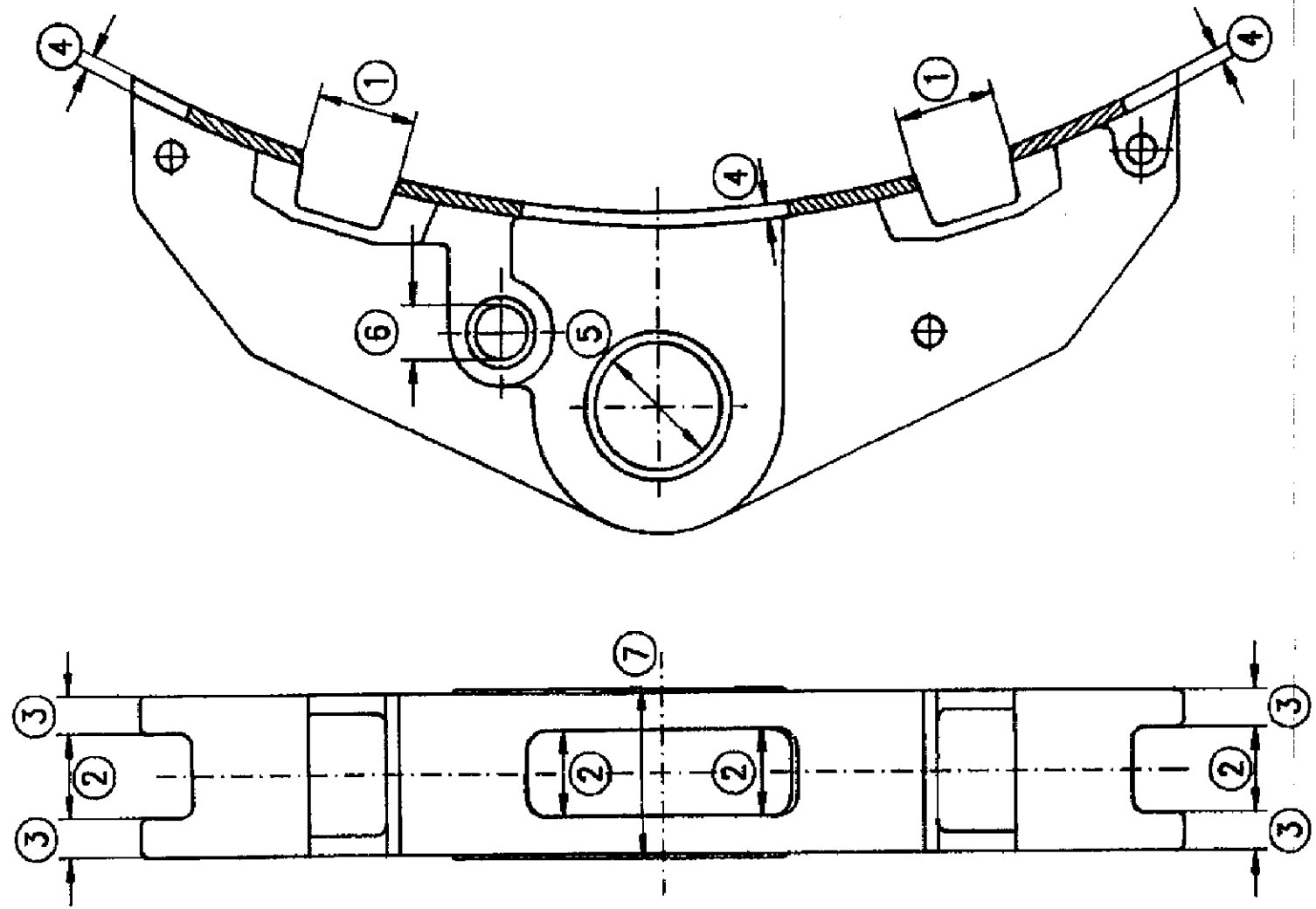
Dans la zone X le levier fourché peut être conçu d'une façon différente si ceci s'avère nécessaire pour respecter la distance par rapport à l'axe du levier (84 mm). L'autre extrémité du levier doit être adaptée au robinet utilisé.
 The forked lever may be shaped differently in the X area if this proves to be necessary to keep within the distance from the stop-cock centre line (84 mm). The other end of the lever must be adapted to the stop-cock used.
 Im Bereich X kann der Gabelhebel eine andere Gestalt haben wenn dies zur Einhaltung des Abstandes von der Hahnmitte (84 mm) erforderlich ist. Das andere Ende des Gabelhebels ist dem jeweiligen Luftabsperrhahn anzupassen.

- - (Cote minimum admise
- - (Minimum dimension permitted
- - (Mindestmasse



PORTE-SEMELLES DE FREIN - BRAKE SHOE INSERT HOLDER - BREMSKLOTZSCHUCHE





Limiting dimensions for the manufacture of brake shoe insert holders								1)
Measuring point →	1	2	3	4	5	6	7	8
Nominal dimensions	47.0	41.0	17.5	7.0	60A11	25.0	80.0	60A11
Maximum tolerance	48.0	43.0	17.5	7.0	60.53	25.5	80.0	59.66
Minimum tolerance	47.0	41.0	15.5	6.0	60.34	25.0	79.0	59.47
Limiting dimensions for maintenance	50.0	45.0	15.0	5.0	61.5	25.7	77.0	58.5

(1) Measuring point 8 relates to the brake triangle pins

Wagons fitted with wheels with a diameter of 920 mm and 1000 mm		
D (t)	under D or S running conditions (20 t)	under SS running conditions (20 t)
	44	37 H11
50	44	50

(1) Ring diameter before assembly

TRIANGLE DE FREIN - TRIANGULAR BRAKE BEAM - BREMSDREIECK

PLANCHE III
PLATE III
TAFEL III

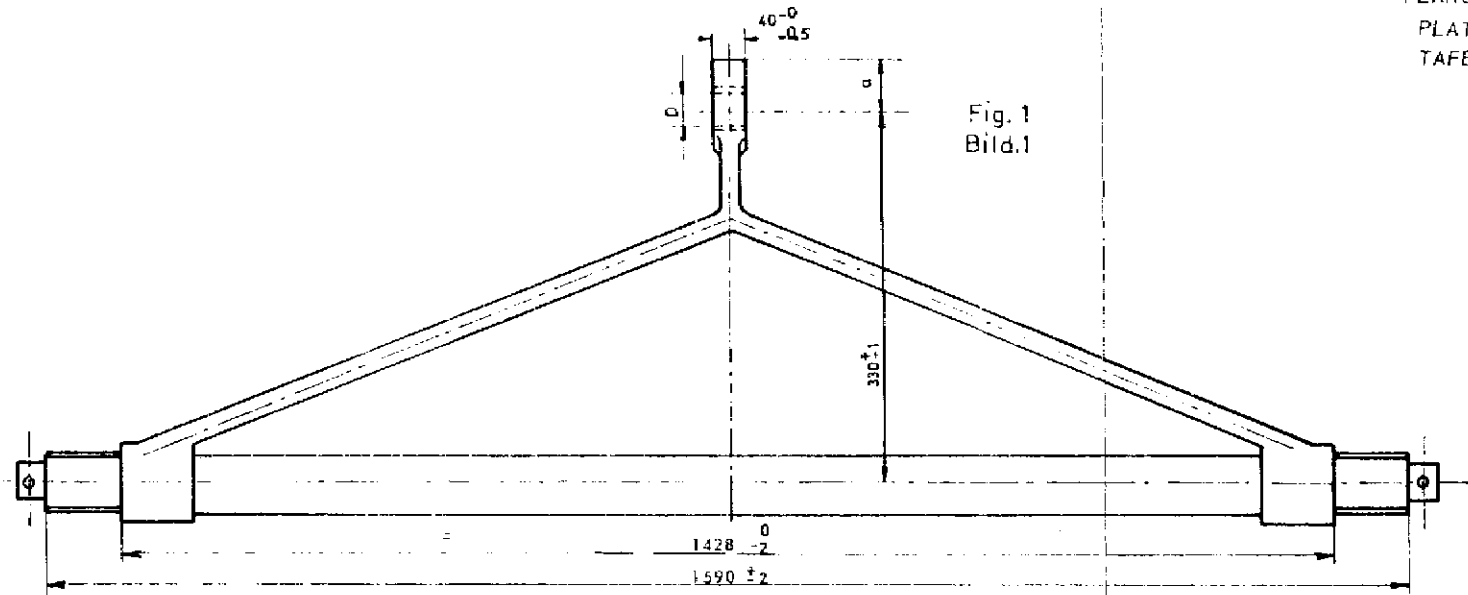


Fig. 1
Bild.1

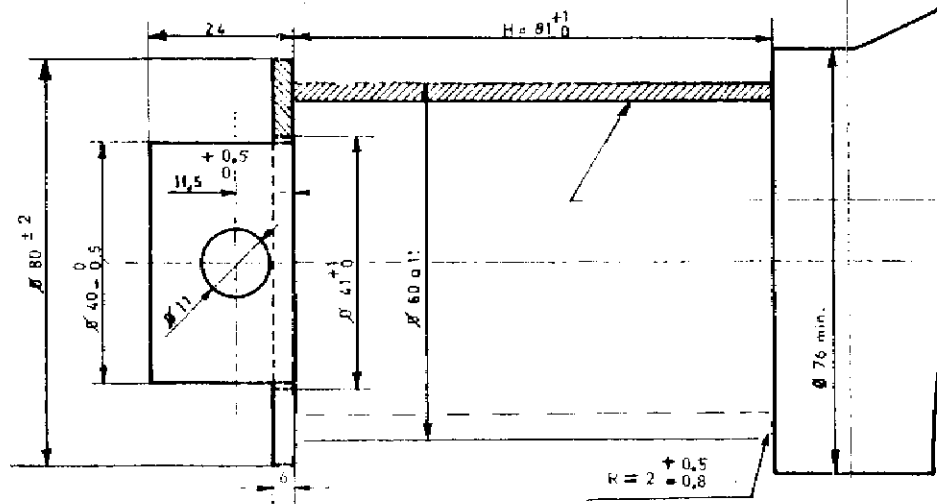


Fig. 2
Bild. 2

A titre indicatif:
La bague n'est pas obligatoire

For information:
The ring is not obligatory

Anmerkung:
Die Buchse ist nicht bindend vorgeschrieben

**2-AXLE AND BOGIE WAGONS SUITABLE FOR ORDINARY, S AND SS (20+ PER AXLE) RUNNING CONDITIONS
STANDARDISATION OF THE DIMENSIONS OF THE BRAKE RIGGING ARTICULATED JOINTS**

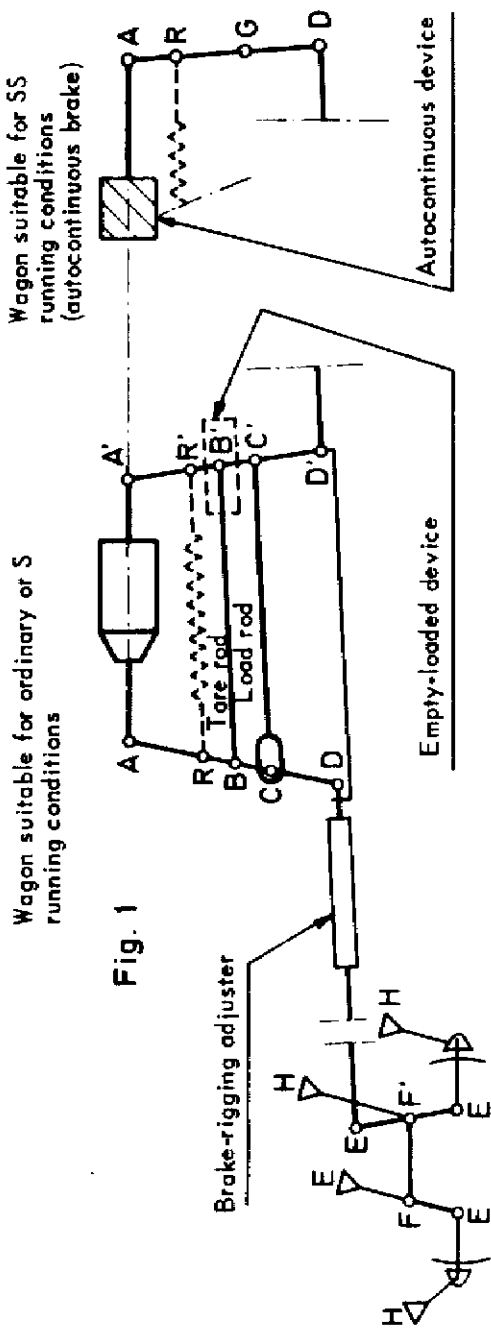
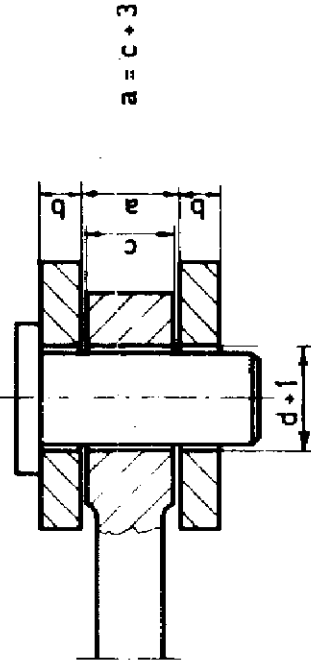


Fig. 1

Fig. 2



	Diameter ϕ of the pin (1)											
	Articulated joints											
	A	B	C	D	E	F	G	H	R(4)	b	c	
Ordinary and S running conditions	Horizontal lever (2) Vertical lever (2)	30	36	50	36	-	-	-	-	30	15	30 or 40(6)
		-	-	-	-	36	50	-	24	-	20	40
SS running conditions	Horizontal lever (2) Vertical lever (3)	36	-	-	40	-	-	60	-	30	20	40
		-	-	-	-	40	60	-	24	-	20(5)	40

(1) Steel $R_m \geq 370 \text{ N/mm}^2$ subjected to a suitable superficial hardening treatment

(2) Steel $R_m \geq 370 \text{ N/mm}^2$.

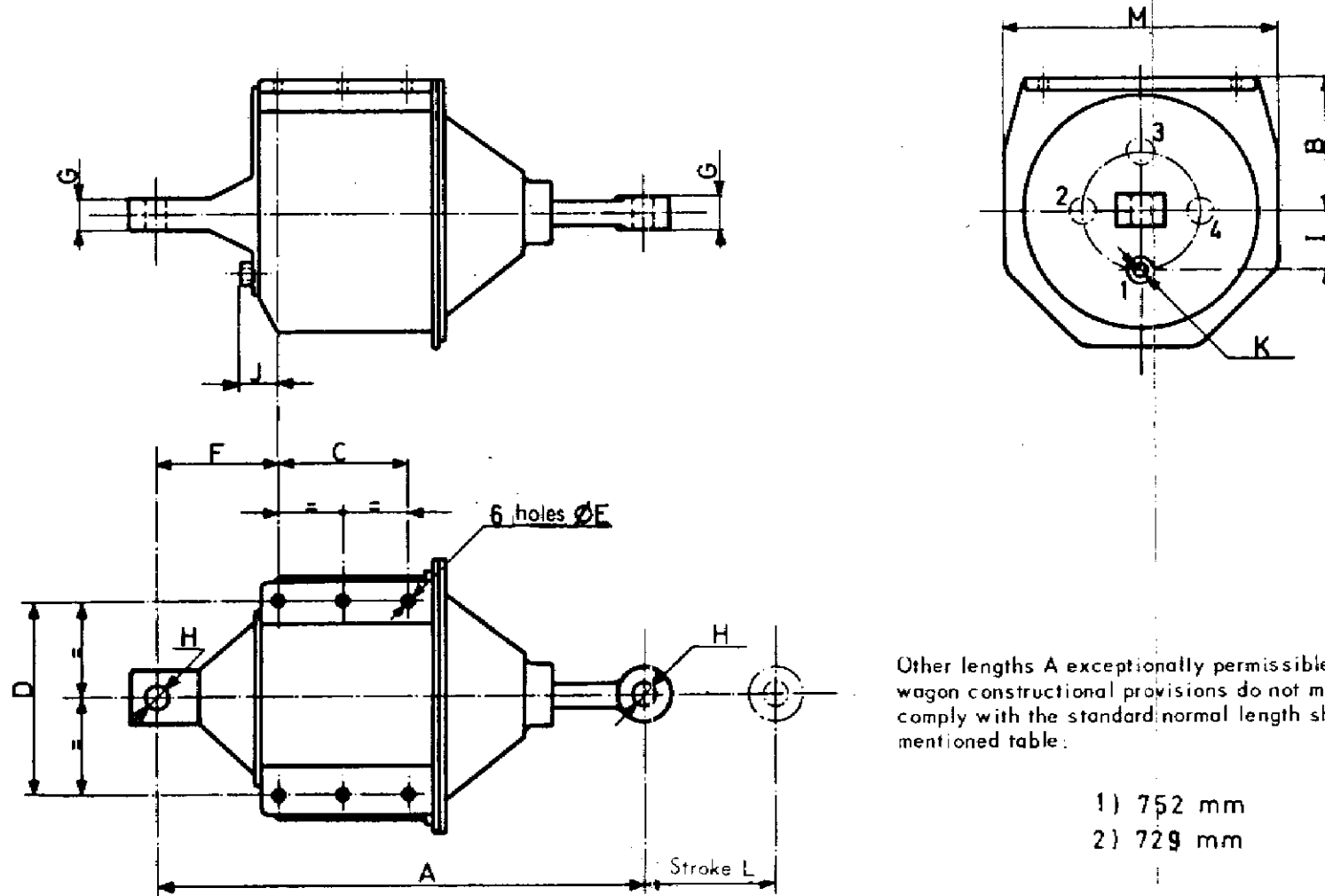
(3) Steel $R_m \geq 520 \text{ N/mm}^2$.

(4) In the case of an external return spring.

(5) Thickness increased to 30 mm in the centre part.

(6) 30 mm for 2-axle wagons (12" cylinder), 40 mm for bogie wagons (16" cylinder).

BRAKE CYLINDERS



Other lengths A exceptionally permissible in the event when the wagon constructional provisions do not make it possible to comply with the standard normal length shown in the under-mentioned table:

- 1) 752 mm
- 2) 729 mm

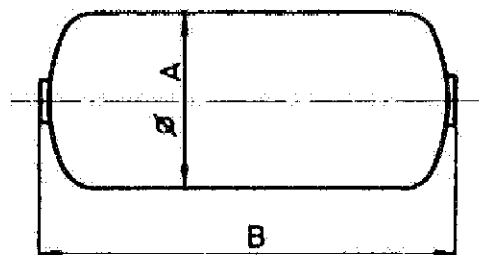
NOTE - The normal position of the air supply connection is shown in thick lines (1). However, the cylinder must be so designed that the positions 2, 3 and 4, in thin lines, may be achieved as an alternative, by the mere alteration of the assembly conditions at the time of manufacture.

Type of cylinder	Dimensions												
	A	B	C	D	E	F	G	H	I	J	K	L	M
∅406 (16")	¹⁾ 890	224	228	334	27	207	40	31	100	68	1"*	230	(476)
∅300/305 (12")	²⁾ 814	170	228	254	18	182	30	31	90	44	1"*	220	(364)

* Cylindrical tapping

GAZ - G1H

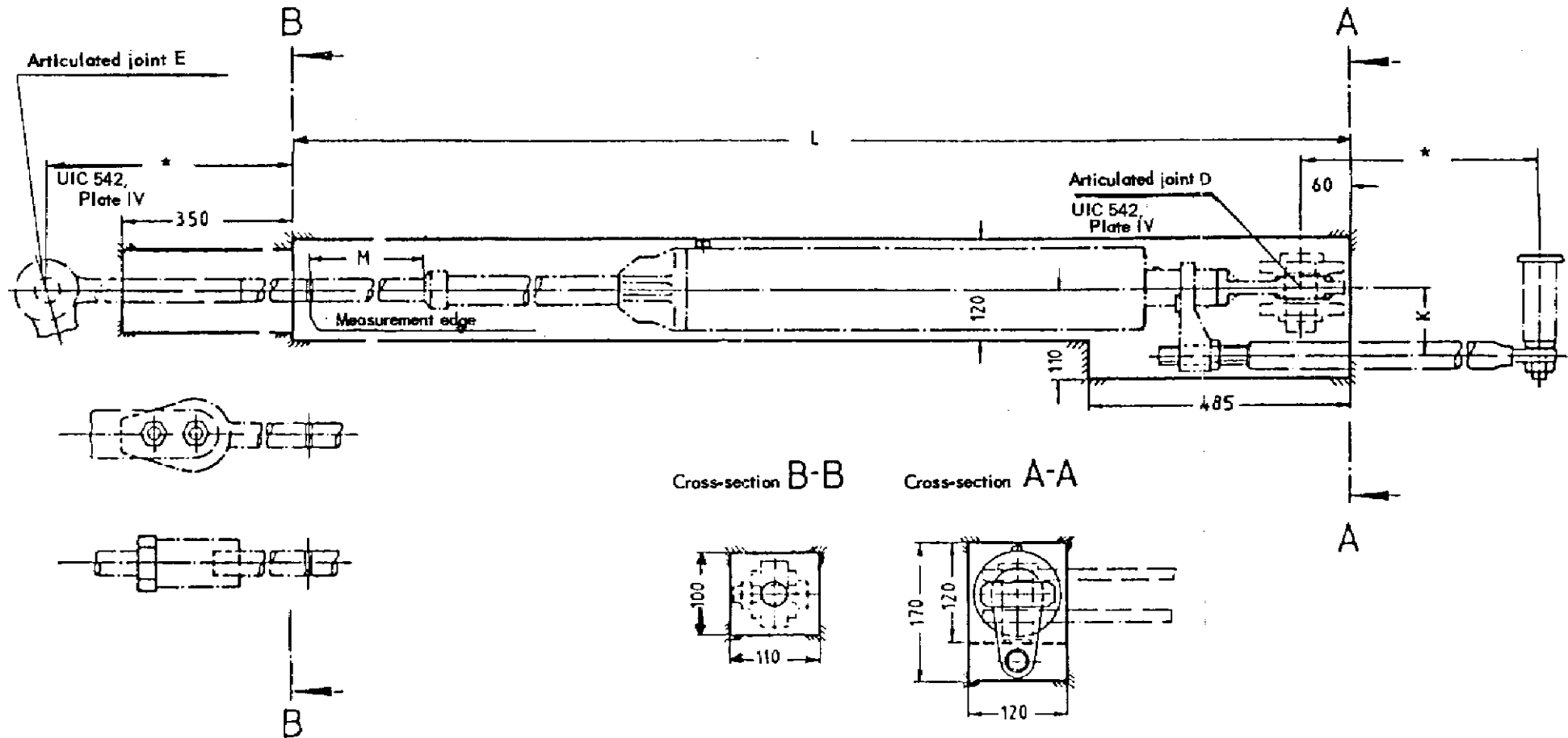
BRAKE RESERVOIRS
OVERALL DIMENSIONS



Wagons	2-axle	bogie
Brake cylinder	Ø300/305 (12")	Ø406 (16")
Reservoir capacity	40 to 75ℓ	88 to 125ℓ
A	350 mm	400 mm
B	1200mm	1500 mm

ENVELOPE AND CHARACTERISTICS OF BRAKE-RIGGING ADJUSTERS

(for forces of up to 75 kN in the brake-rigging)

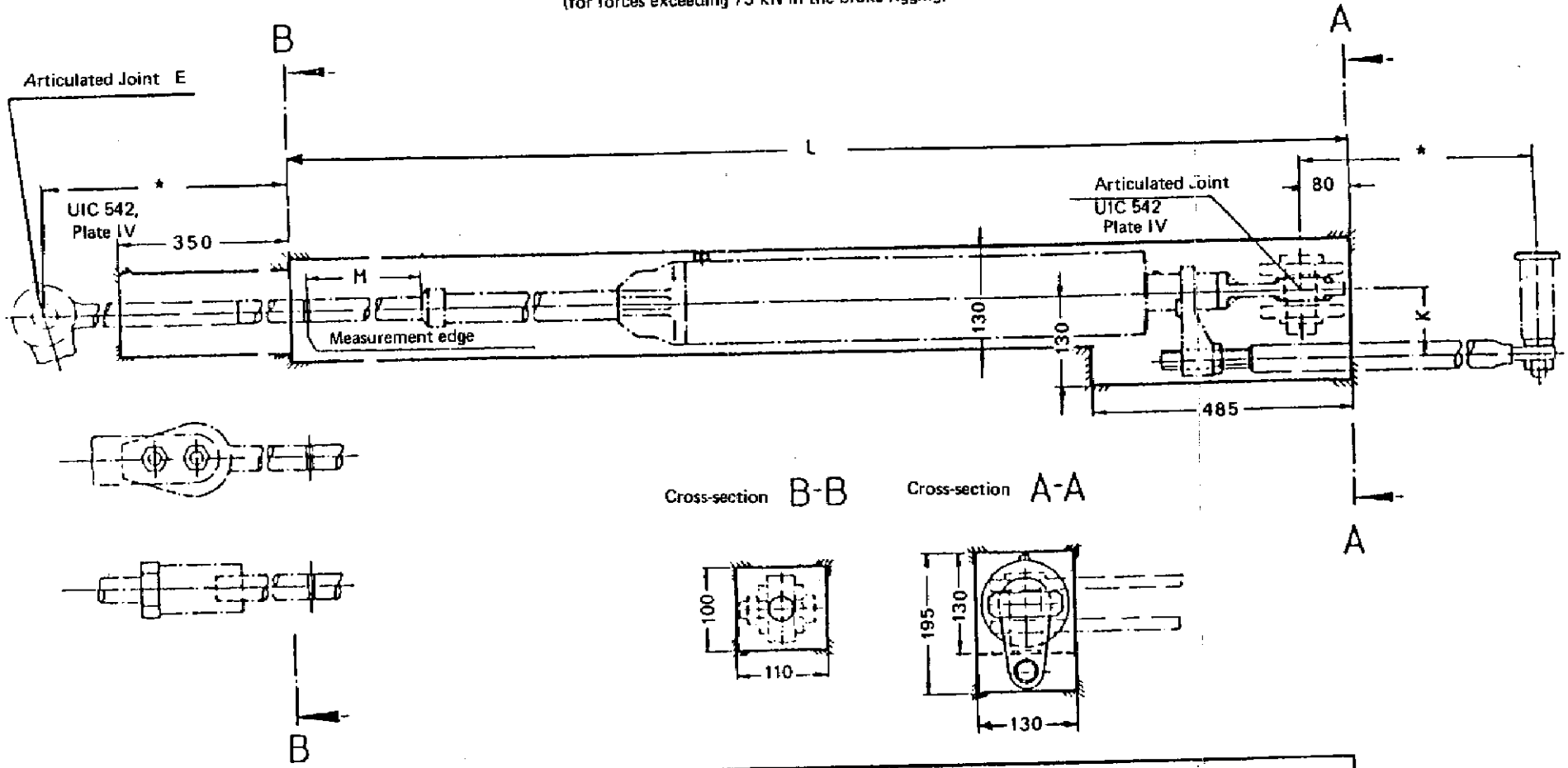


★ Adapted to the wagon

★★ Recommended for new wagons

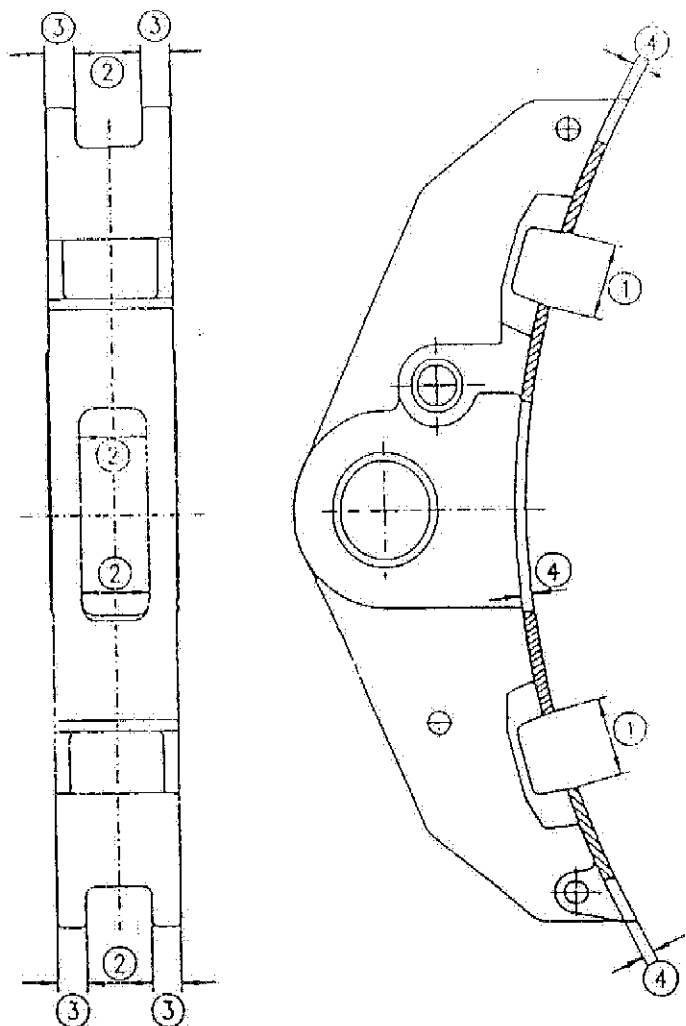
Serial No.	Length	Characteristics of brake-rigging adjusters			
		Minimum adjustment length	Force	Opposing force	Distance
1	L 2325	M 580	75 kN	2 kN	83 **
2	1875	440			

ENVELOPE AND CHARACTERISTICS OF BRAKE-RIGGING ADJUSTERS (for forces exceeding 75 kN in the brake-rigging)



- ★ Adapted to the wagon
- ★★ Recommended for new wagons
- 120 kN are valid for wagons with 20t axle load

Serial No.	Length	Characteristics of brake-rigging adjusters			
		Adjustment length	Force	Opposing force	Distance
	L	M			K
1	2 390	580	● 85 to 130 kN	2 kN	83 **
2	1 940	440			
3	1 640	280			



Tolerances for maintenance of brake-shoe insert holders				
Measuring point →	1	2	3	4
Nominal dimension	47.0	41.0	17.5	7.0
Max.	48.0	41.0	17.5	7.0
Min.	47.0	43.0	17.5	6.0
Tolerances for maintenance	50.0	45.0	15.5	6.0

Dimensions 1,2 and 3 must be checked using a gauge

Application

With effect from 1 January 1982 for all wagons to be built in the future, with the following exceptions:

- Regulations relating to the envelope and the characteristics of brake-rigging adjusters 1 January 1982
- Regulations relating to brake shoe inserts 1 July 1983
- Plates Ia, Ib, Ic, Id 1 January 1995
- Plates IIb 1 January 1995
- Plate VIII 1 January 1982
- Plate IX 1 July 1983

} the necessary changes as regards the manufacture of brake-shoe inserts can be made until 31 December 1988

} for existing coaches

All UIC Railways. A temporary derogation shall, however, be granted to:

- DB, DSB and PKP as regards non-articulated double brake-shoe insert holders,
- CD and ZSR as regards application of the Note to Plate V.

O

Record References

Most recent headings under which the question was dealt with:

- *Question 5/T/FIC* - Revision and amendments to leaflets managed by the Sub-Committee for Braking.

Point 5.2 - Approval of an amendment to Leaflet 542 "Brake parts - Interchangeability".

(Traction and Rolling Stock Committee: Paris, June 1981).

- *Question 5/T/40* - Study of standardisation of cast iron brake-shoe inserts.

a) Measure to prevent sideways protrusion of inserts; unification of dimensions (examination of drawings of inserts), request from DR to include the curved transverse profile of a second variant of friction surface profile for brake-shoe inserts.

(Sub-Committee for braking: Paris, January 1983).

- *Question 5/T/FIC* - Revision of Leaflet 542.

(Sub-Committee for braking: Zurich, March 1988).

- *Question 5/T/40* - Study for standardisation of cast iron brake-shoe inserts.

- *Question 5/T/FIC* - Revision of UIC leaflets.

(Sub-Committee for braking: Paris, January 1993, January 1994).

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