THE EVOLUTION OF THE APPARATUS DIMENSIONS IN WOMEN'S ARTISTIC GYMNASTICS

Has the floor exercise area always been 12 m x 12 m? Has the balance beam always been 10 cm wide? When did the balance beam start using padding? When did the uneven bars start having tension cables?

This booklet gives you the basic contours of the ever-changing apparatus norms.

It's based primarily on the Olympic rulebooks (OLY Rulebooks), World Championships rulebooks (WC Rulebooks), and Apparatus Norms booklets.

Note: This booklet does not include much of the information found in the FIG bulletins and circulars over the years. The Women'sTechnical Committee frequently used such publications to make changes or offer clarifications between editions of the Apparatus Norms.

v. 1.0

Photo by Schirner/ullstein bild via Getty Images)

Many thanks to Hardy Fink for supplying many of the dimensions in this PDF.

VAULT.

YEAR	SOURCE	TYPE OF HORSE	HEIGHT FROM FLOOR	LENGTH OF HORSE	WIDTH OF HORSE	TYPE OF BOARD	DIMENSIONS OF BOARD (LxWxH)	OTHER
1936	OLY Rulebook	Side Horse (Comp.)	0.95 m	1.80 m*	35-37 cm*	No Board		Without pommels *Based on men's vault/ pommel horse dimensions
		Side Horse (Opt.)	Optional			Hard Board	? x ? x 10 cm	
1948	OLY Rulebook	Side Horse	1.10 m from the top of board (1.50 m from the ground)			Elastic Board	1.90 m x ? x 0.40 m (max)	Without pommels
1950	WC Rules	Side Horse	1.10 m	1.80 m	35-37 cm	Hard Board	? x ? x 10 cm	Without Pommels
1960	OLY Rulebook Apparatus Norms	Side Horse	1.10 m	1.60 m	35 cm		120 cm x 60 cm x 12 cm	The horse must be fixed to the ground by turnbuckles. The board should offer the most elasticity possible. There will be a thin layer of non-slip rubber on the upper part of the board.

VAULT.

YEAR	SOURCE	TYPE OF HORSE	HEIGHT FROM FLOOR	LENGTH OF HORSE	WIDTH OF HORSE	TYPE OF BOARD	DIMENSIONS OF BOARD (LxWxH)	OTHER
1976	USGF News, March 1976	Side Horse	1.20 m					
1998	Technique Nov./Dec. 1997	Side Horse	1.25 m*					
2001	Vault table introduced							

* The 2000 Apparatus Norms had an error. The WAG vault height was printed as 1.20 m, even though the new height (i.e. 1.25 m) was effective as of Jan. 1, 1998. This may have been the reason for the vault debacle at the Sydney Olympics. More here.

Elastisches Sprungbrett

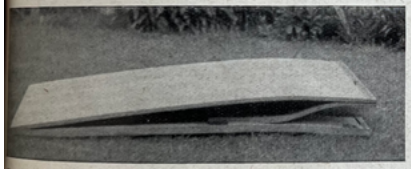
„System Reuther" neues Modell

Der neuzeitlichen Entwicklung der Leibesübungen folgt zwangsläufig eine entsprechende Entwicklung der Turngeräte. Der schwungvolle Turnstil verlangt elastische Turngeräte, die den ungehemmten natürlichen Bewegungsablauf nicht stören, sondern fördern und unterstützen.

Der rhythmisch-organische Bewegungsablauf ist der Ausfluß eines harmonischen Zusammenspiels der dem menschlichen Körper innewohnenden Spannkräfte. Ein Turngerät fördert diesen Bewegungsablauf, wenn sich das Kräftezusammenspiel wesensgleich in seiner Gesamtkonstruktion fortsetzen kann. Deshalb forderte die Geräte-Normierungskommission des Internationalen Turner-Bundes in einem Bericht: „Die Maße und Formen der Turngeräte sind einzubeziehen in die Forderung, daß das Turngerät eine gewisse Vorspannung besitzen muß, die der Reaktionsfähigkeit des menschlichen Körpers entsprechen soll, um alle Bewegungen des Turnenden weitgehend zu unterstützen, um schwungfördernd zu sein."

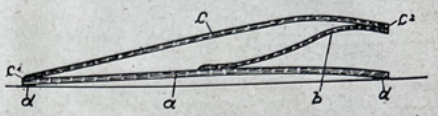
Ein Turngerät, das diese grundsätzliche Forderung verwirklicht, muß also — wie ich in früheren Veröffentlichungen über neuzeitlichen Turngerätebau bereits ausführlich darstellte — bei Beanspruchung konstruktionsbedingt vom Angriffspunkt aus bis zur Bodenauflage gleichmäßig und pyramidenförmig aufgebaute Gegenkräfte entwickeln, die dem Maß der Einwirkung durch den Übenden gleich sind, es muß Vorspannung besitzen.

Am augenfälligsten und eindringlichsten verlangt die Erfüllung dieser Forderung nach Elastizität das Sprungbrett. Tickt doch beim Sprung über das 130 cm hohe Längspferd bei entsprechendem Anlauf durchschnittlich das siebenfache Körpergewicht des Springers im Augenblick des Absprungs auf das Brett ein. Die Nachteile eines harten Brettes für Bänder, Sehnen, Gelenke und das ganze Knochengerüst des Springenden und für die Leistung selbst bedürfen angesichts



dieser Erfahrungstatsache keiner besonderen Erläuterung. Sie sind offensichtlich. Es ist noch nicht allzu lange her, und die älteren Turner erinnern sich noch gut der bandagierten Fuß- und Kniegelenke vieler Wettkämpfer beim Pferdspringen als der sichtbaren Zeichen dieser Nachteile des harten Sprungbrettes.

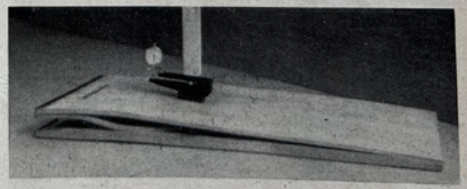
Ich selbst litt stark an beim Pferdspringen zugezogenen Kniegelenkschäden, die mir diese Übungsart sehr verleideten. Deshalb war ich schon im Jahr 1940 bemüht, ein elastisches Brett zu konstruieren. Diese Bemühungen waren allerdings eingeschränkt durch die damaligen Normen und Maße. Trotzdem gelang mir in der Konstruktion des „elastischen Reutherbretts" eine Form zu finden, die dem harten Wettkampfbrett gegenüber wenigstens die gröbsten körperschädigenden Erschütterungen vermied. Dieses Brett hat vor allem nach dem Kriege allgemein Anklang und Verwendung bei Deutschen Meisterschaften und Länderkämpfen gefunden. Es bedeutete einen Fortschritt im Zuge der neuzeitlichen Geräteentwicklung. Angesichts der Entwicklung des Turnstils und der starken Evolution des Kunstturnens in den letzten Jahren hat das Technische Komitee des Internationalen Turner-Bundes, einem Vorschlag der Geräte-Normierungskommission folgend, die bisher gültigen Maße und Normen überprüft und so abgeändert, daß die Turngeräte weitgehend dieser Entwicklung angepaßt werden können. So erlauben die neuen Richtlinien für das Wettkampfbrett innerhalb bestimmter Maße (Länge 120 cm, Breite 60 cm, Höhe 12 cm) größtmöglichste Elastizität. Damit war Gelegenheit gegeben, den Gedanken der Vorspannung auch in der Konstruktion des Sprungbretts zu verwirklichen, d. h. die Gesamtkonstruktion in den Federungsprozeß einzubeziehen. Meine jahrelangen Erfahrungen und Erkenntnisse aus Versuchen fanden ihren Niederschlag in einem Sprungbrett, das auf Grund seiner konstruktionsbedingten Vorspannung im Rahmen der gegebenen Maße größtmöglichste und vor allem gleichmäßig wirkende Federkraft mit großer Bruch- und Rutschsicherheit vereint, wobei die ebenfalls elastische Übertrittsfläche und die Elastizität des Brettes auch



an seinen hohen Kanten unfallverhütend wirken. Die zweckmäßig feste Verbindung aller Einzelteile und damit die Einbeziehung der Gesamtkonstruktion in die Federung verhindert, daß Zug- oder Druckspannungen ins Leere gehen. Die Federkraft ist wesentlich wirkungsvoller. Dadurch wird die Lust und Freude am Springen in allen Altersstufen, besonders aber bei unserer Jugend, geweckt. Die Leistungen werden besser, schöner, wirkungsvoller. Die Möglichkeit der maschinellen Herstellung der Einzelteile wirkt sich preisgünstig aus.

Das neue Sprungbrett besteht in allen seinen Teilen aus Holz als organischem, den menschlichen Körper am besten ansprechenden Werkstoff. Die Einzelteile sind in einem Spezialverleimungs- und -preßverfahren hergestellt. Dabei bildet die Zahl der Fournierschichten bereits ein wesentliches Moment im Zusammenspiel der Federkräfte.

Abb. 1 veranschaulicht das Brett in seiner neuen Form. Abb. 2 zeigt einen Längsschnitt durch das Brett. Die die Gesamtkonstruktion tragenden Holmen (a) sind entsprechend ihrer Aufgabe geformt und am kräftigsten gehalten. Sie sind an den Enden mit einem Gummibelag (d) versehen, der nicht nur die Rutschsicherheit gewährleistet, sondern auch durch Aufnahme der sich in den Holmen nach beiden Seiten auswirkenden Druckspannungen in den Federungsprozeß mit eingeschaltet ist. Die beiden Holmen sind durch das s-förmige Federblatt (b) fest miteinander verbunden. Von dieser Feder wird das Deckblatt (c), das Absprung- und Übertrittsfläche in einem Stück vereint, getragen. Das Deckblatt ist an seinem oberen Ende (c_2) mit der Feder und an seinem unteren Ende (c_1) mit den Holmen fest verbunden. Aus Form, Stärke, Anordnung und Zusammenbau der Einzelteile ergibt sich die der Gesamtkonstruktion eigene Vorspannung. Die durch sie gewährleistete gleichmäßig wirkende Federkraft wird in Abb. 3 geprüft. Bei einer praktisch wahrscheinlichen Höchstbelastung von 500 kg setzen sich Deckblatt, Feder und Holmen aufeinander bzw. auf dem Boden auf. Das Brett ist deshalb bruchsicher, und die Vorspannung wirkt nach seiner Entlastung bleibenden Formveränderungen entgegen.



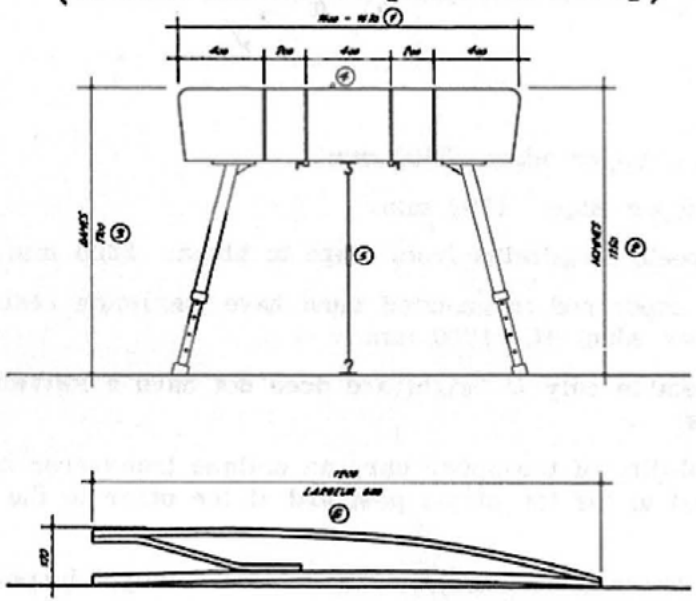
Das neue Modell des „elastischen Reutherbretts" ist nicht nur in Versuchen, sondern auch in jahrelanger Vereinsarbeit, durch den Eidgen. Turnverband der Schweiz, an den Sporthochschulen Köln und München-Grünwald und bei den Europameisterschaften im Kunstturnen 1955 eingehend erprobt. Seine bisherige Bewährung hat die Mitglieder der technischen Kommission des ITB veranlaßt, dieses Brett auch für die Wettkämpfe bei den Olympischen Spielen in Melbourne zu verwenden.

Richard Reuther

Richard Reuther discusses the new Reuther boards, *Deutsches Turnen*, n. 22, 1956

VAULTING HORSE (MEN AND WOMEN)

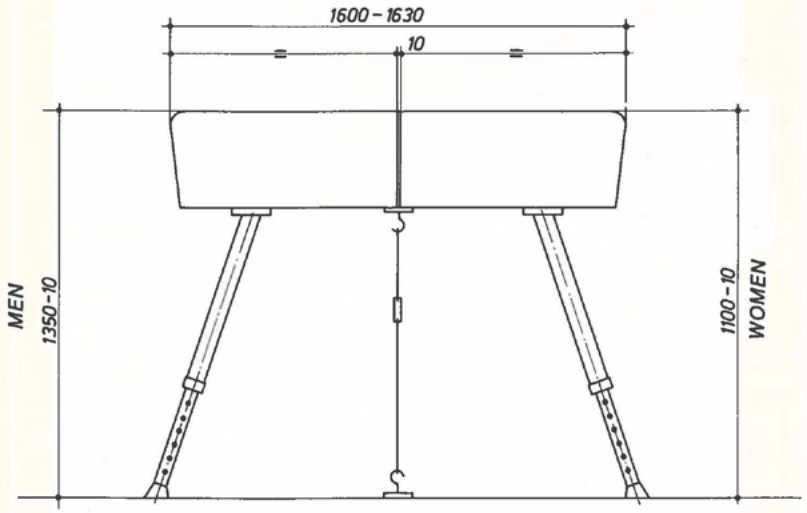
(CHEVAL POUR LE SAUT [HOMMES ET DAMES])



1. Length of the body of the horse: 1600-1630 mm.
2. Height from floor for men: 1350 mm.
3. Height from floor for women: 1100 mm.
4. Grip zones for men: 400 mm in front and back, then 200 mm in front and back and 400 mm in middle. Grip zones are marked by a white line 10 mm wide.
5. The horse should be fixed to the floor.
6. The beat board should have the following measurements: length 1200 mm, height 120 mm, width 600 mm. Within these measurements it can have great elasticity. It is important that this elasticity is provided evenly at the highest point (see Reuther system). For women, the beat board should be covered with a layer of rubber. The beat board should be placed at increments of 50 mm by means of a frame connected to the horse.

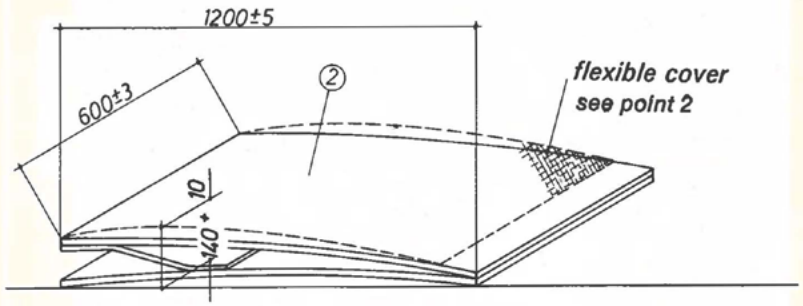
1961, Apparatus Norms, printed in the AAU Gymnastics Guide, 1962-1963

Vaulting horse



Style:	Variations 1, 2, or 3 of the pommel horse.
Material:	As described.
Measurements:	According to sketch. Height adjustment: from 1100–1350 mm in intervals of 50 mm. Grip zone for vaulting horse: in center, marked out by white lines 10 mm wide.
Anchors:	Absolutely necessary.
Pommel Horse used for vaulting:	In this case, it is a must to ensure a smooth surface after pommels have been removed (possibility of danger). For minor competition or training, a cover may be used. See sketch, last page of booklet.

Double flex springboard
for men and women



1. The springboard must offer great flexibility (elasticity). This flexibility must be most effective on the highest point.
2. The upper surface of the board must be covered with a non-slip artificial layer and must be equipped with a 6 mm strong elastic material and collectively 10 mm strong.
3. The springboard must be attachable to the horse, and must be adjustable in intervals of 50 mm.
4. The use of the double flex springboard is authorized for use with various pieces of apparatus, according to rules in the Code of points.
5. The material used is wood. The shape of the board is the manufacturer's choice, bearing in mind however the requirements for testing the equipment.
6. The measurements given in the above sketch must be strictly adhered to.
7. Testing the flexibility (elasticity) of the apparatus:
   a. A weight of 600 kg placed 300 mm from the edge of the highest point on the upper surface must force the board downwards up to 85 mm, with a tolerance of ±5 mm or less.
   b. When the weight is removed, the board must resume its original shape.
8. The surface must be covered with a non-slip rippled rubber material or similar glide protection.

1974, Apparatus Norms

FIG APPARATUS NORMS

1.) SPRINGBOARD

2.) Use

In Artistic Gymnastics, for vaulting, and for mounts on Parallel Bars, Uneven Bars and Beam.

3.) Form

The profile of the springboard must adhere exactly to the respective blue print.

Its upper surface rises in an arched form, approaching the horizontal between 75 cm and 95 cm, measured from the frontal angle.

The height reached at this point, may not be exceeded. After this point, the upper surface may continue horizontally or slope downward.

The rise of the arch is 3 cm to 4 cm.

It must be observed, see blue print of profile, that the arch rises to 16 cm, up to the 95 cm farthest point shown in the horizontal projection.

The remaining 4 cm are for the base.

The stipulated length and height refers to the horizontal projection of the upper plate, i.e. the take-off plate.

The base may be larger, but cannot extend more than 2 cm beyond the projection of the board.

This form, based on given length, width, height and profile, must be strictly adhered to.

Deviations are permitted only within the parameter of the given tolerances.

SPRINGBOARD

4.) Measurements

- Length	120 cm * 1 cm
- Width	60 cm * 1 cm
- Height	20 cm * 1 cm
- Cushion Cover	2 cm * 0.5 cm
- Total height with cushion cover	22 cm * 1.5 cm

(* Tolerance)

5.) Adjustments

Not applicable.

6.) Functional Properties

Elasticity

The springboard must have a regulated restricted elasticity, in order to keep the mechanical support given to the gymnast, within tolerable limits.

The elasticity of the springboard must be most effective in the area between 75 cm and 95 cm, measured horizontally from the frontal angle (point A).

Absorbance

The springboard must dampen the counter pressure, i.e. reduce motion energy.

Uniformity

Elasticity and absorbancy must be evenly distributed, so that the effect of the spingboard differs only slightly, regardless whetherthe force of the impact is at the middle axis, or away from it.

Slip Resistance

The upper surface of the springboard must offer slip resistance.

Apparatus Norms, 1989 - Thanks to Hardy Fink for the photos.

SPRINGBOARD

Stability

The board must not dislodge during use.

Noise Dampening

The board must not produce disturbing sounds during its use.

.) Indicators of the functional properties

The use of specific test procedures resulted in the following measurements, which characterize the mandatory properties:

Elasticity and Absorbance

	SEIN	SRUCK	FOMAX
Minimum	70 mm	285 mm	
Maximum	80 mm	405 mm	4550 N
Maximum difference for excentric measuring points	4 mm	25 mm	150 N
Maximum difference for axile measuring points	15 mm	120 mm	

Additional Indicators

Measurements and Test procedures for the following properties must still be defined:

Slip Resistance of the upper surface
Noise level during take-off

8.) Materials and Construction

They are left to the discretion of the manufacturer, but must strictly adhere to the given norms.

SPRINGBOARD

9.) Technical Safety Rules

The springboard and its base may not have any sharp corners, edges and no protruding parts.

10.) Color

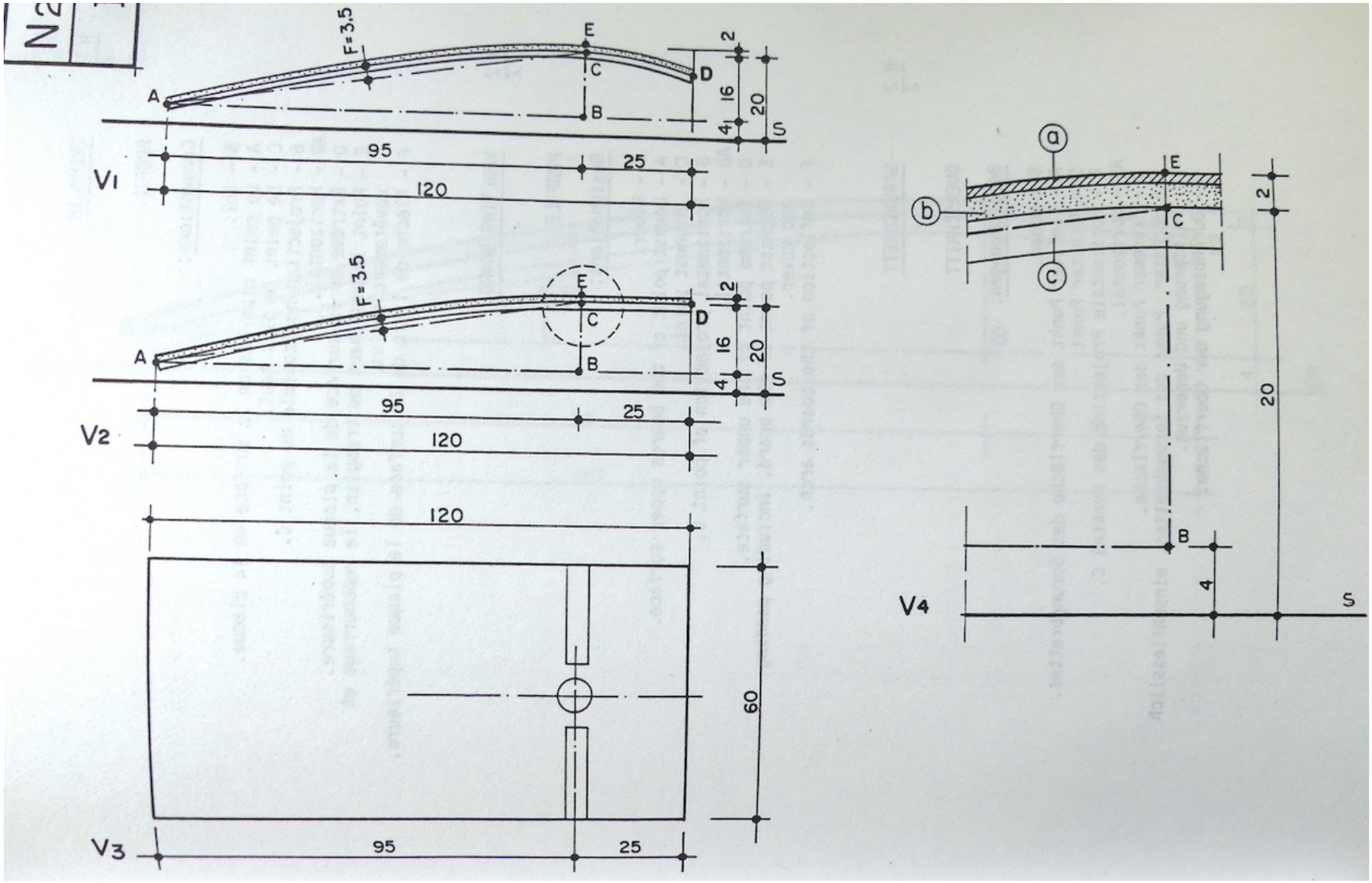
Optically disturbing patterns, stripes or insignias on the upper surface are not permitted.

A mark will indicate the point were the rebound is most effective.

The selection of color is left to the discretion of the manufacturer.

The E.C. may designate the color for certain events.

Apparatus Norms, 1989



Apparatus Norms, 1989

If you grew up in the United States around this time, you probably thought that springboards with coiled springs were the norm everywhere. They weren't. The Apparatus Norms were vague, which is why the 1991 World Championships used a springboard, while the 1992 Olympic Games used a Reuther-style board.

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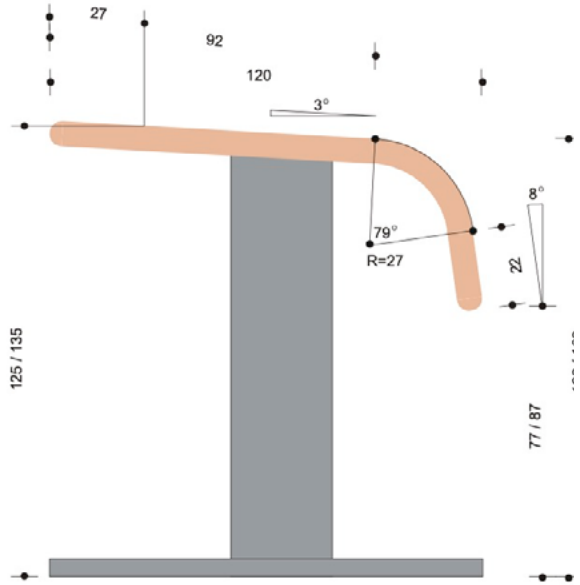

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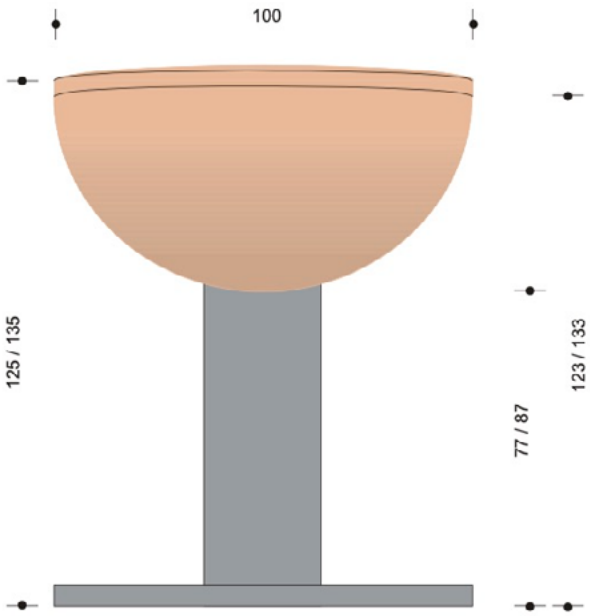

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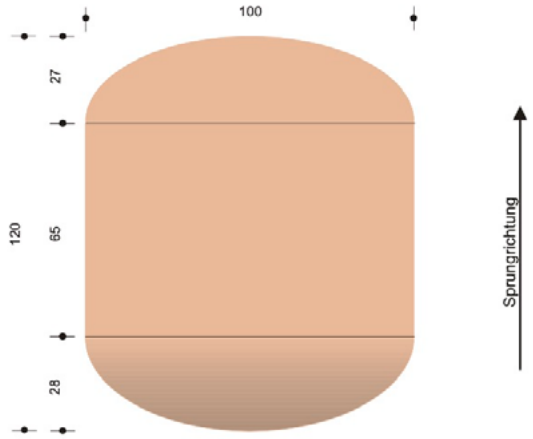


Bemerkung: Unterkonstruktion schematisiert.

Draft of the Vault Table from Janssen Fritsen in 2000. Janssen Fritsen was the equipment manufacturer for the 2001 World Championships in Ghent, Belgium.

Note: Many of the dimensions are the same today. There's still an 8º angle at the front of the table, and the table is still 120 cm long. But there are differences. Today's vault, for example, is slightly narrower (95 cm today vs 100 cm in 2001), and the back of the vault is no longer as curved as it was in 2001.

UNEVEN BARS.

In this section, the measurements in parentheses and italics are not listed in the documents cited. I have calculated them so that you can more readily compare past measurements to today's measurements.

YEAR	SOURCE	HEIGHT OF LOW BAR	HEIGHT OF HIGH BAR	LENGTH OF BARS	HORIZONTAL SPREAD	DIAGONAL SPREAD	BAR THICKNESS	OTHER
1936	OLY Rulebook	150 cm	230 cm	3 to 3.40 m*	42-46 cm	*(Max: 92.28 cm)*		*Based on men's parallel bar dimensions
1950	WC Rulebook	IDEM	IDEM	IDEM	IDEM	IDEM		Oval-Shaped Bars
1960	OLY Rulebook Apparatus Norms	IDEM	IDEM	3.50 m	43-48 cm	*(Max: 93.30 cm)*	41 x 51 mm	To ensure its absolute stability, a transverse support will be considered, fixed on the one hand to the upper part of the sleeve and on the other hand at the base. The base of the apparatus must be very heavy and offer the maximum stability which can be ensured by a device allowing the fixing in the room or on the sports ground.

UNEVEN BARS.

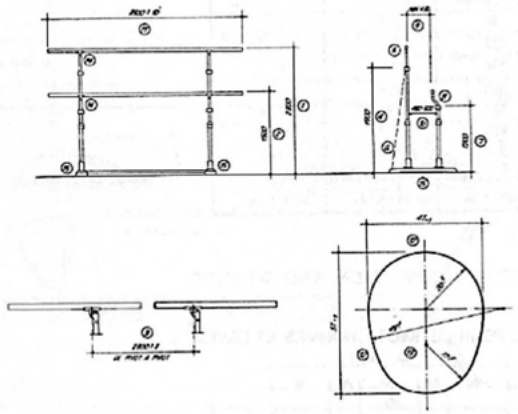
YEAR	SOURCE	HEIGHT OF LOW BAR	HEIGHT OF HIGH BAR	LENGTH OF BARS	HORIZONTAL SPREAD	DIAGONAL SPREAD	BAR THICKNESS	OTHER
1965	Apparatus Norms	150 cm	230 cm	3.50 m	43-52 cm	*(Max: 95.41 cm)*	41 x 51 mm	
1967	Apparatus Norms	IDEM	IDEM	2.40 m	50-58 cm	*(Max: 98.81 cm)*	42 x 48 mm	The guy wires are fixed to the ground at lateral distances of 1.30 m. and transversal distances of 2 m. from the foot of the uprights. (Total lateral distance between fixed points in the floor: 5.50 m; total transveral distance between fixed points on the floor: 4.0 m) It's the same setup as the men's high bar and rings. The 1967 European Champs were the first major FIG competition to use the new bars.
1974	Apparatus Norms	IDEM	IDEM	IDEM	55-78 cm	*(Max: 111.73 cm)*	IDEM	

UNEVEN BARS.

YEAR	SOURCE	HEIGHT OF LOW BAR	HEIGHT OF HIGH BAR	LENGTH OF BARS	HORIZONTAL SPREAD	DIAGONAL SPREAD	BAR THICKNESS	OTHER
1979	Apparatus Norms	150 cm	230 cm	2.40 m	56-90 cm	*(Max: 120.42 cm)*	42 x 48 mm	
1987	Apparatus Norms	155 cm	235 cm	IDEM	60-110 cm	*(Max: 136.01 cm)*	Options: 40 x 44 mm 41 x 45.1 mm 42 x 46.2 mm	
1989	Apparatus Norms	160 cm	240 cm	IDEM	90-140 cm	*(Max: 161.25 cm)*	Options: 40 x 44 mm 42 x 46 mm 44 x 48 mm	
1995	Le Gymnaste, Mar. 1995				100-150 cm	*(Max: 170 cm)*		
2000	Apparatus Norms	160 cm	240 cm	2.40 m	*(Max: 160 cm)*	127-179 cm	40 mm	
2006	Apparatus Norms	170 cm	250 cm	IDEM	*(Max: 161 cm)*	130-180 cm	IDEM	

UNEVEN (ASYMETRIC) BARS

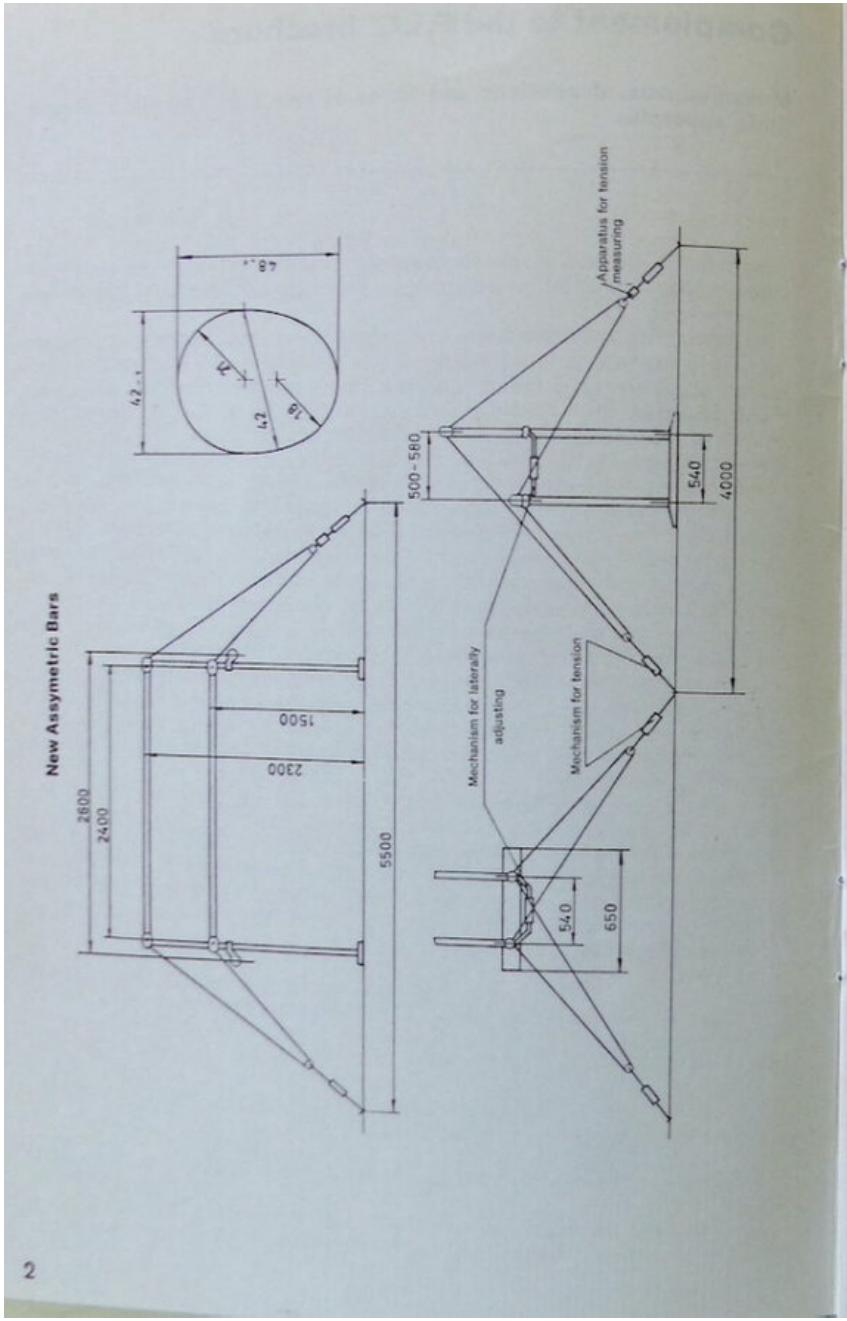
(BARRES ASYMETRIQUES)



1. Height of the upper bar, upper edge: 2300 mm.
2. Height of lower bar, upper edge: 1500 mm.
3. Distance between the posts lengthwise from hinge to hinge: 2300 mm.
4. The post in which the upper rod is inserted must have maximum resistance and have a height (upper edge) of: 1900 mm.
5. The upper bar is adjustable only in height and does not have a swiveling elbow for lateral adjustments.
6. To ensure absolute stability of the upper bar, an oblique transverse bracket will be fixed at one end to the top of the post and at the other to the base of the apparatus.
7. The post in which the lower rod is inserted must have a height (upper edge) of: 1200 mm.
8. The lower bar must be adjustable in height and have a swiveling elbow allowing lateral movement.
9. Distance between the two bars: 430-480 mm.
10. Lower distance between the posts: 480-500 mm.
11. Length of bars: 3500 mm.
12. Diameter of bars 41 x 35 mm.
13. Bars should be egg-shaped (see drawing).
14. The bars will not have any flat surface or edge where they are attached to the posts.
15. The base of the apparatus must offer a maximum of stability; it may be desired to assure this by a system permitting fastening indoors or on a field.

N.B. The dimensions and tolerances of the drawings should be strictly followed.

1961, Apparatus Norms, printed in the AAU Gymnastics Guide, 1962-1963



2

New Assymetric Bars

The new assymetric tension bars for Women's Gymnastics were tried out by the technical authorities of various federations and by world-class gymnasts. They replace the apparatus described on pp 24–28 of the 1965 F. I. G. brochure «Dimensions etc. Competition Apparatus» having considerable advantages. We state below the details of the apparatus and methods of testing to ensure uniform performance.

At international competitions or meetings, judges must see that the apparatus is tested and conforms to the standards laid down in paragraphs 1, 2, 3, 4, 9 and 10 and they must see that the measurements, form and functions correspond to the rules laid down by the F. I. G.

1. The apparatus is to be fixed to the ground by four fixtures. The distances for the fixing points is the same as for the fixed bar and the rings. The assymetric bars can therefore be put up without any difficulty in any place where there are fixings for a fixed bar.

2. When the apparatus is up, the initial tension must operate a force of 275 kg (± 5 kg) at the fixing points. A measuring device placed on one of the cables will enable the tension to be measured.

3. The hand-bars must show the same tension, which means identical tension at each end of the bars. When the lower bar is at 1500 mm and the upper bar 2300 mm, a test load of 135 kg must produce a sag of 65 mm (± 6 mm).

4. The length of the bars from pivot to pivot is 2400 mm with a tolerance of ± 3 mm. In shape they must be ovoid (in profile) Measurements: 42/48 mm with a tolerance of + 1 mm on each measurement.

5. Material of bars: wood with braces to prevent breaking.

6. The higher uprights and the lower ones are fixed on a mobile crosspiece. It must be absolutely guaranteed that the pivots of one hand bar are at the same distance as those of the other.

7. The bars must not have crosspieces running in the same direction as the hand-bars.

8. The uprights of the bars must be adjustable in heigt i. e. 3 x 5 cm.

9. The bars must also be adjustable laterally. These two mechanisms for adjusting (height and width apart) must not in any way inter-

3

1967, Apparatus Norms. The 1967 European Championships were the first FIG event to use the new bars. The footprint for the cable system was identical to that of the men's rings and high bar. Thanks to Hardy Fink for supplying the images.

ıven bars

The apparatus is attached to four ground anchors. The distance between the anchors is the same as those of the Horizontal Bar, so the apparatus can be set up in any gymnasium if Horizontal Bar anchoring is available.

The apparatus must be constructed in such a manner, that once errected, the initial tension must generate a force of 275 kg (±5 kg) to the ground anchors. A tension indicator is placed on one of the cables, to enable the measuring of tension (see sketch, right below).

Both bars must be under the same tension, which means identical tension on each end of the bars.
When the lower bar is at a height of 1500 mm, and the upper bar at a height of 2300 mm, a test load of 135 kg must produce a sag of 65 mm (±6 mm).

The length of the bars, from pivot to pivot, must be 2400 mm with a tolerance of ±3 mm.
In profile (shape) the bars must be ovid.
Measurements: 42/48 mm with a tolerance of +1 mm on each measurement.

Materials: Wood with braces to prevent total breaking.

High and low columns must be on a mobile crosspiece. The construction must guarantee that the pivots of one bar are the same distance as those of the other.

The bars cannot have crosspieces running in the same direction as the hand-bars.

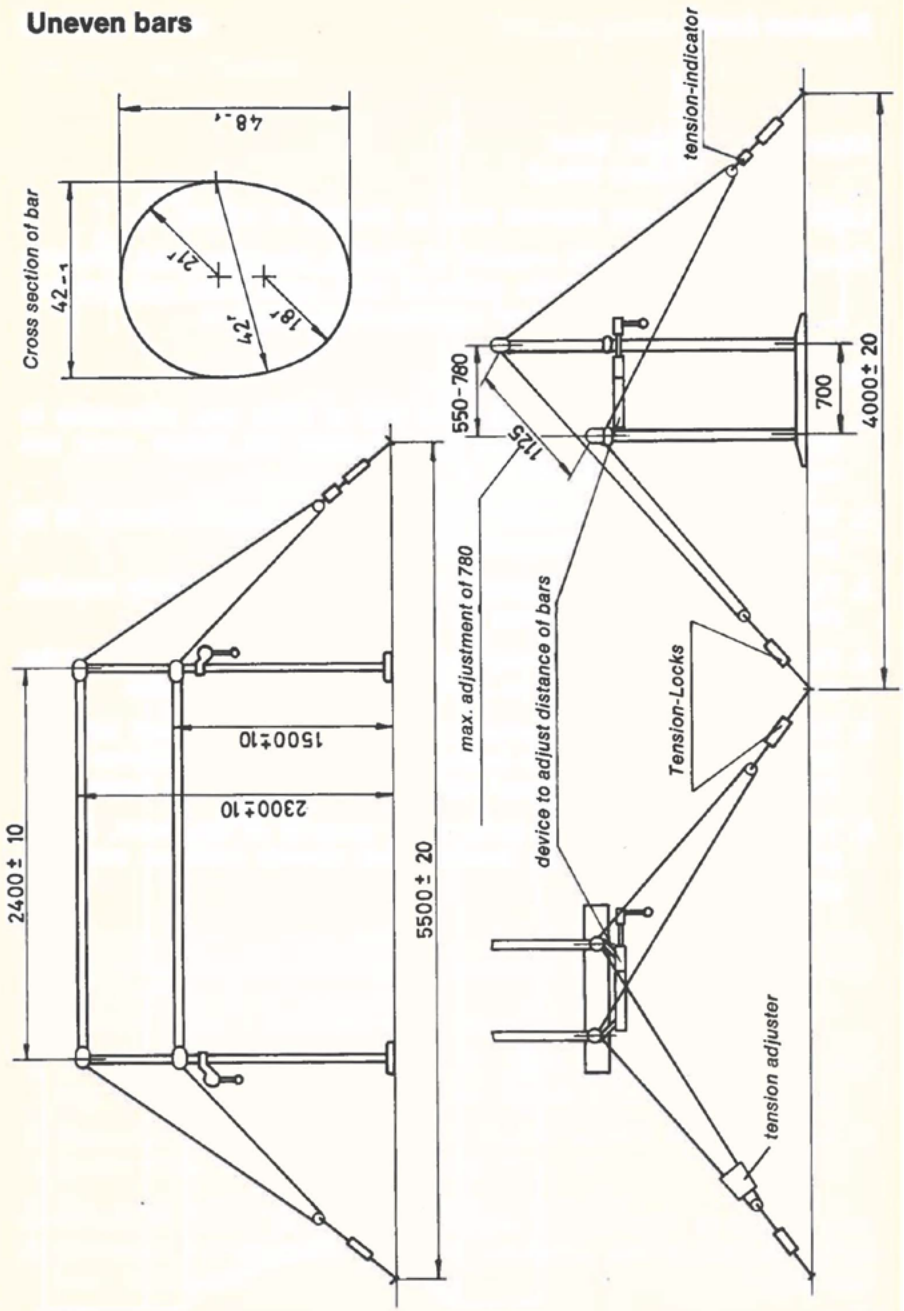
The uprights of the bars must be adjustable in height, i.e. 3×5 cm.

The bars must be easily adjustable laterally, the adjustment mechanism may in no way hinder the gymnast. It must be so constructed that both adjusting devices show a minimum distance of 2600 mm, tension cannot loosen during adjustment.

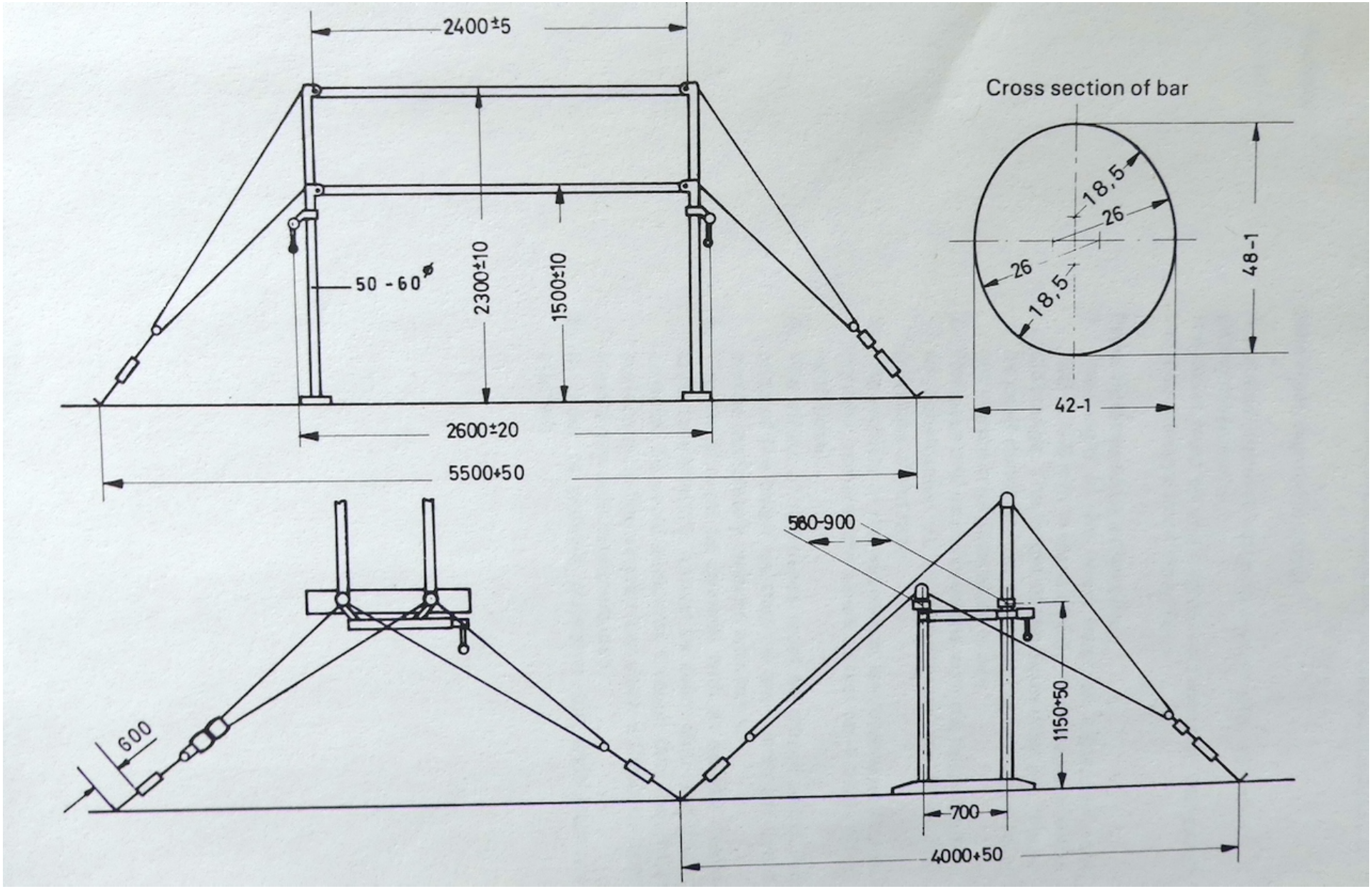
The uprights must be so constructed as to allow deviation in all directions.

All measurements must be strictly adhered to.

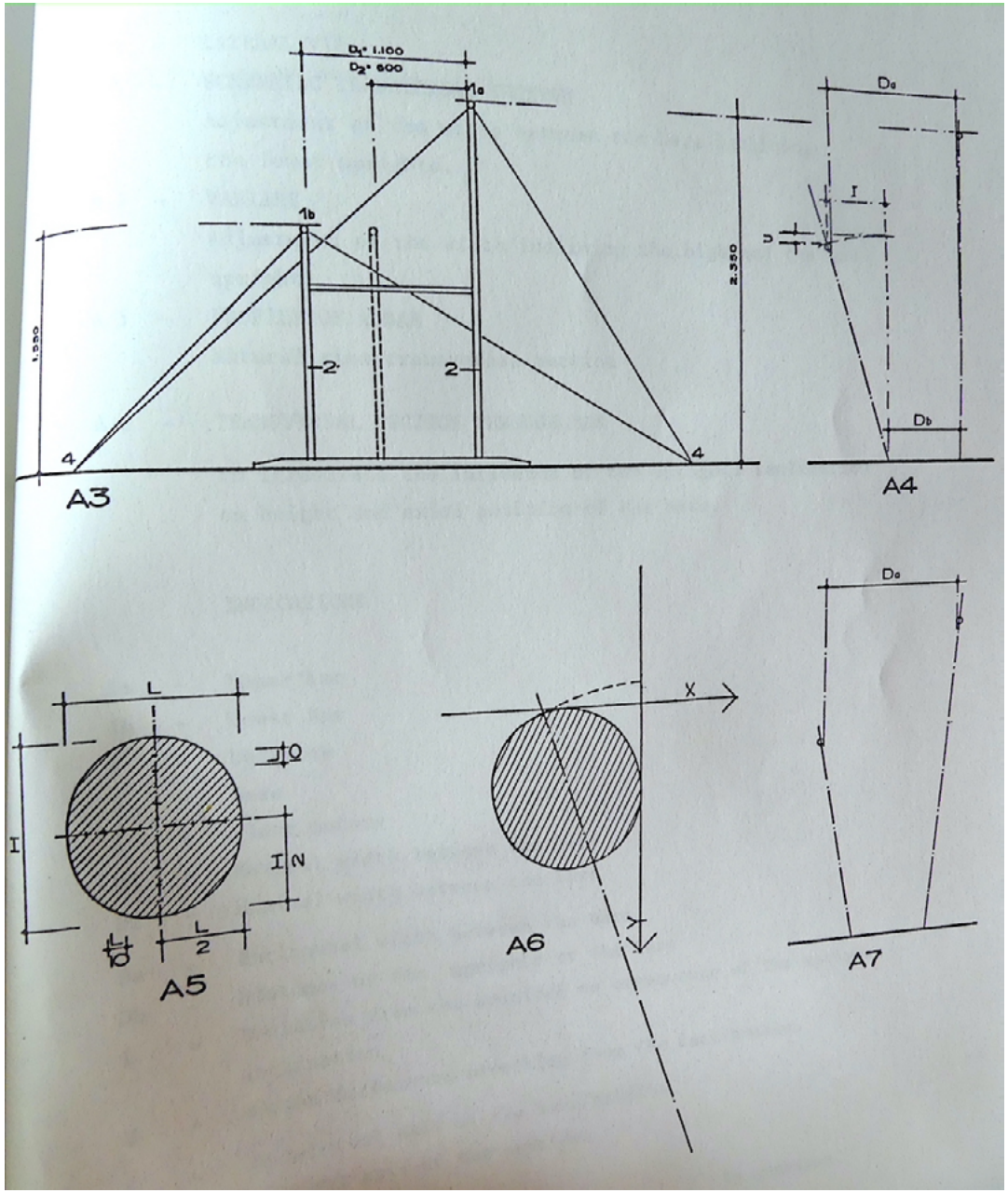
Uneven bars



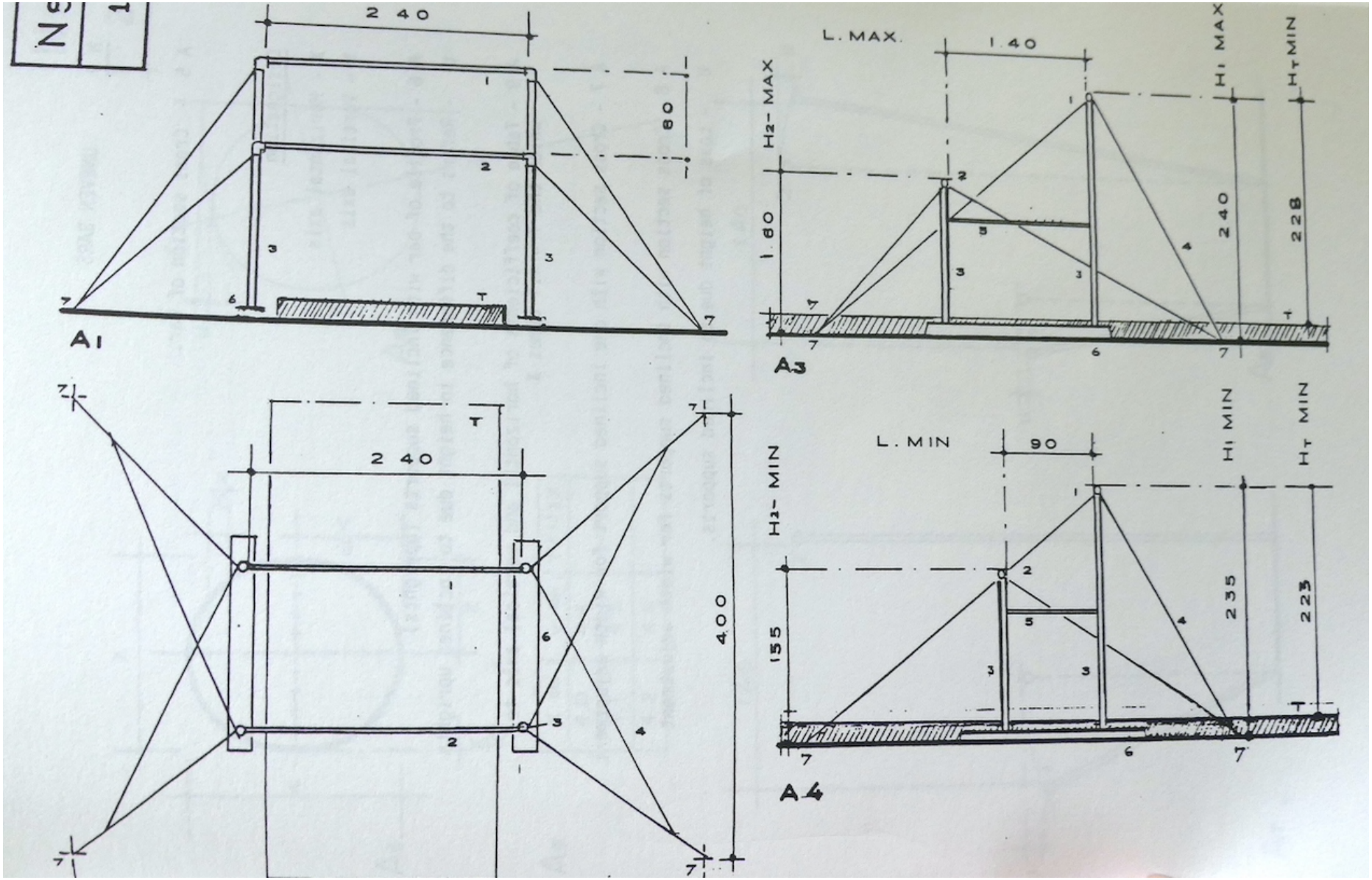
1974, Apparatus Norms



1979, Apparatus Norms



1987, Apparatus Norms



1989, Apparatus Norms

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WAG 2
01.01.2000
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Uneven Bars

Use • Women's Artistic Gymnastics

Construction / Description of material, measurements

Form

The apparatus consists of two bars, which run parallel, but at different heights, and are carried by a support base.

The support base has four uprights, which are held by tension cables ankered to the floor.

Each bar is carried by 2 supports.

On low and one high support are connected to a floor device and a width adjustment device.

Measurements

Bars :

Diameter	4.0 cm	* 0,1 cm
Length	240 cm	* 1,0 cm
Distance between the sockets	200 cm	* 1,0 cm

Height of the lower edge of the bars :

upper bar	235 - 240 cm	* 1,0 cm
lower bar	155 - 160 cm	* 1,0 cm
diagonal distance between the 2 bars	127 - 179 cm	* 1,0 cm

Distance of floor ankers :

lengthwise	550 cm	* 5 cm
crosswise	400 cm	* 5 cm

Functional Properties

Both bars must have the same, uniform elasticity. To assure this, their supports must be articulated.

The bar surface must provide a good glide and turn capability but may not be slippery.

To ensure grip stability, the bars surface must absorb moist.

The bars must be reinforced against total breakage.

A safeguard system must prevent a unintented release of the movable components of the apparatus.

When the apparatus is used for performances, no sways, vibrations and counter swings should occur.

Colour

The bars retain the natural color of wood. They are neither lacquered, nor polished.

Norms / Functional properties
Regarding tests carried out by FIG Tests Institutes : please see chapter IV

Barres assymétriques / Uneveu bars / Stufenbarren

II
WAG 2
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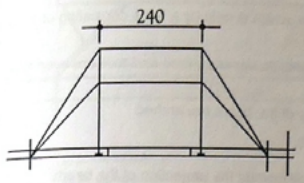
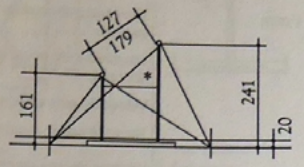
45

* échelle en continu
infinitely variable scale
Skala, stufenlos



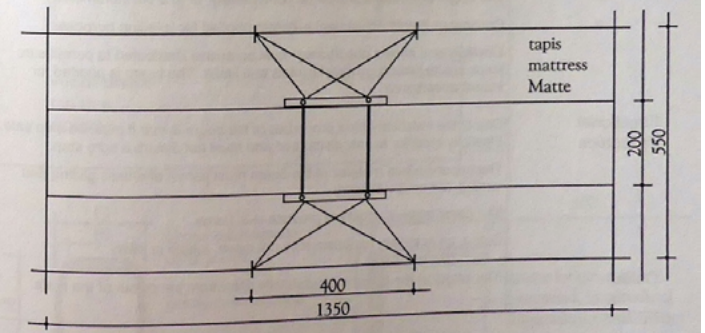
vue de côté
font view
Frontansicht



vue de face
side view
Seitenansicht

porte-main
bar
Barrenholm

surface d'appui 550 x 1350
floor area for apparatus 550 x 1350
Gerätestellfläche 550 x 1350



vue de dessus
top view
Aufansicht

cotes obligatoires;
construction selon le gré;
dessin en exemple

dimensions: mandatory;
design: at your discretion;
drawing: typical example

Maße bindend;
Konstruktion freigestellt;
Zeichnung als Beispiel

2000, Apparatus Norms

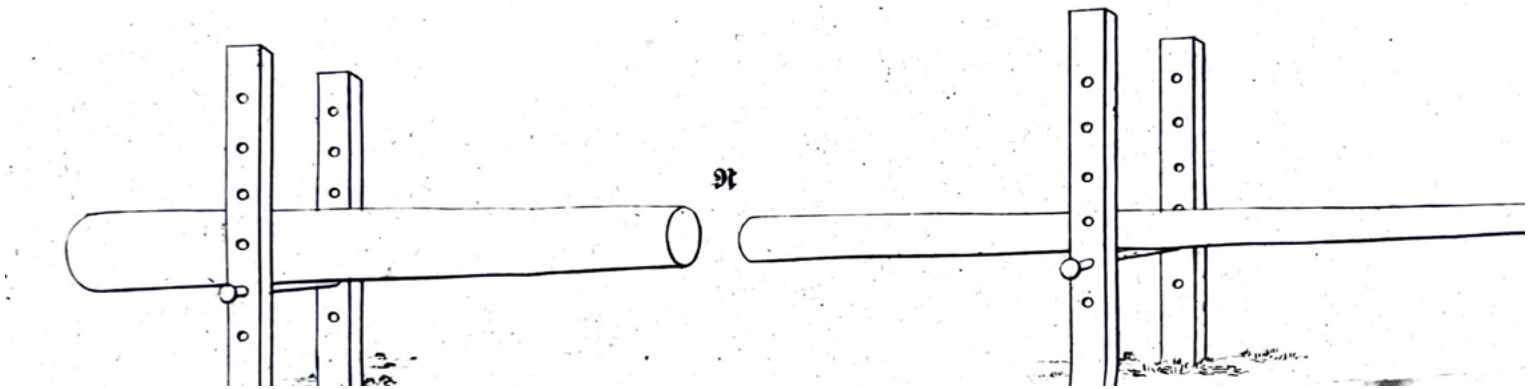
BALANCE BEAM.

YEAR	SOURCE	LENGTH	WIDTH	HEIGHT FROM FLOOR	HEIGHT OF BEAM	OTHER
1934	Dodatek Techniczny do Przewodnika Gimnastycznego “Sokół,” 1933, N. 10	5 m	`8 cm	120 cm		
1936	OLY Rulebook	About 5 m	IDEM	IDEM		
1948	OLY Rulebook	IDEM	10 cm	IDEM		
1950	WC Rulebook	5 m	IDEM	IDEM	16 cm	
1960	OLY Rulebook Apparatus Norms	IDEM	10 cm Domed in the center where the width is 13 cm	IDEM	IDEM	The upright rests on the ground by means of a tripod, the base of which is covered with anti-skid rubber. Beam made of wood that restricts the risk of splintering, natural lacquer
1974	Apparatus Norms	IDEM	IDEM	IDEM	IDEM	Beam must be covered in an elastic layer that is safe for balancing and stepping. Cover must be tear-proof. Top layer: Cover Middle Layer: Wood - 5 mm Bottom Layer: Rubber - 6 mm Note: The reserve athletes tested the padded beam at the 1973 European Champs, but the 1975 European Champs were the first major FIG competition to use a padded beam.

BALANCE BEAM.

YEAR	SOURCE	LENGTH	WIDTH	HEIGHT FROM FLOOR	HEIGHT OF BEAM	OTHER
1979	Apparatus Norms	5 m	`10 cm Domed in the center where the width is 13 cm	120 cm	16 cm	Top Layer: Cover Underneath: Hard Layer Underneath That: Elastic Layer Total Thickness: 12 mm
2000	Apparatus Norms	IDEM	IDEM	125 cm	IDEM	Thickness of beam cover is not specified.
2006	Apparatus Norms	IDEM	IDEM	IDEM	IDEM	Thick covering of 15-30 mm.

2. Der Schwebebaum (Platte 1, Zeichn. N.): ein ſchlanker geradwuchſiger Kien- oder Tannenſtamm ohne Aſtknorren; je länger, deſto beſſer, nicht gut unter 40 F. Länge und 10 Zoll Stärke am Stammende. Er ruht zwiſchen 2 Paar ſtarken Pfählen auf eiſernen Bolzen, die hoch und niedrig geſteckt werden können. — Er darf nicht zu viel, noch zu wenig ſchwanken, ſondern muß das gehörige Leben haben.

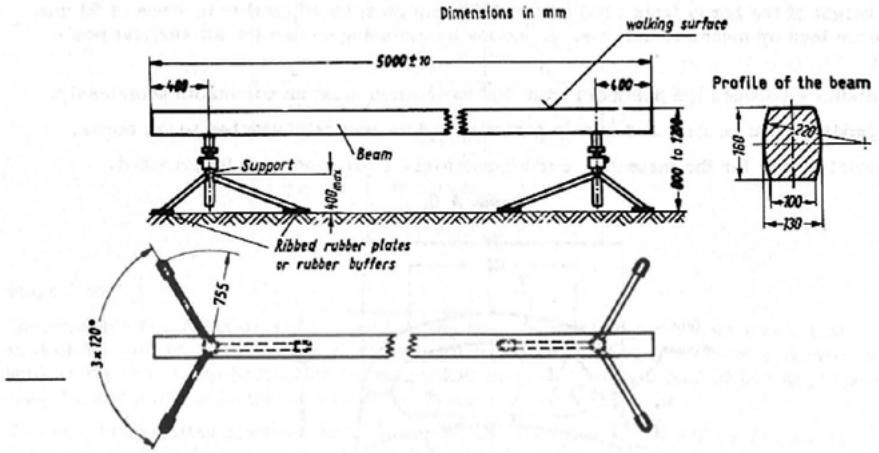


The “Schwebebaum,” Jahn, Die Deutsche Turnkunst, 1816

“Schwebebaum” literally means “floating tree.” Jahn’s precursor to the balance beam was 40 feet long (12.192 m) and the diameter at the thickest part was 10 inches (25.4 cm).

Part E: Balancing beam

Shapes and dimensions not specified are left to the discretion of the manufacturer.



Material for the walking surface of the beam: Wood which restricts the risk of splintering to
for the feet : Steel or cast iron

Beam finish: Natural lacquer. Walking surface even.

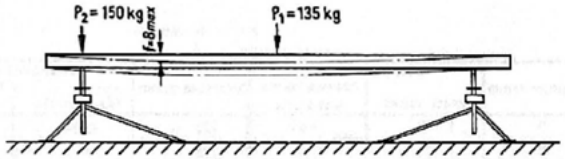
The height of the beam from 800 mm to 1200 mm must be adjustable in steps of not more than 50 mm.

The adjusting device for the height has to be constructed so that the efficiency of the fixture will not be diminished during use.

The balancing beam must not vibrate in its supports during use.

The conception of the feet and adjustable leg should be so designed as to ensure stability on uneven ground.

Inspection



At a level of 1200 mm and a proof stress P_1 = 135 kg in the centre of the beam the deflection must not be greater than f = 8mm

At a level of 1200mm and a proof stress P_2 = 150 kg acting in the axis of an upright the compression of the upright must not be greater than z = 2mm.

The following table is valid for the indication of dimensions in inch:

1961, Apparatus Norms, printed in the AAU Gymnastics Guide, 1962-1963

Balance beam

Material: Base: Steel
Beam: Wood

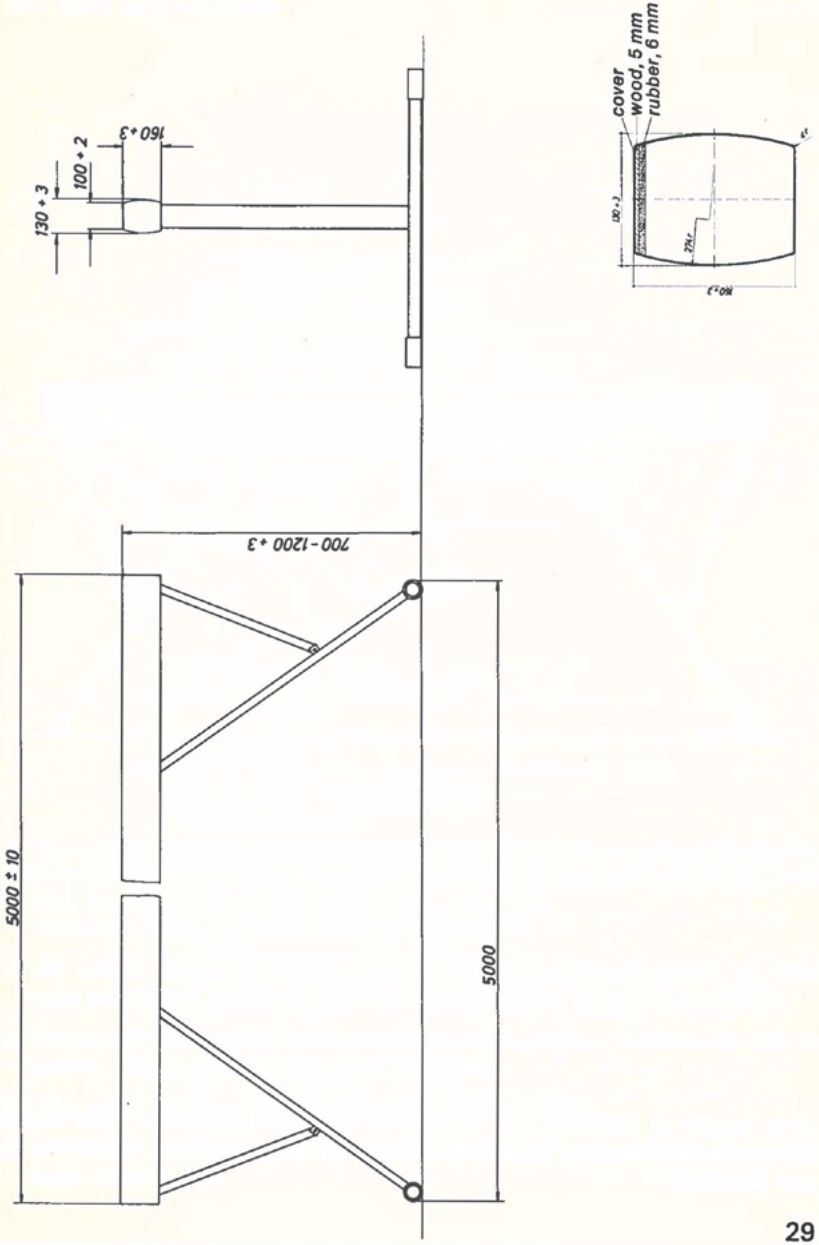
Layer: Elastic material such as plastics or rubber.

Cover: A suitable material of highest breaking point, insuring a dependable glide of feet, good step and balance safety sufficient absorbance of moisture.

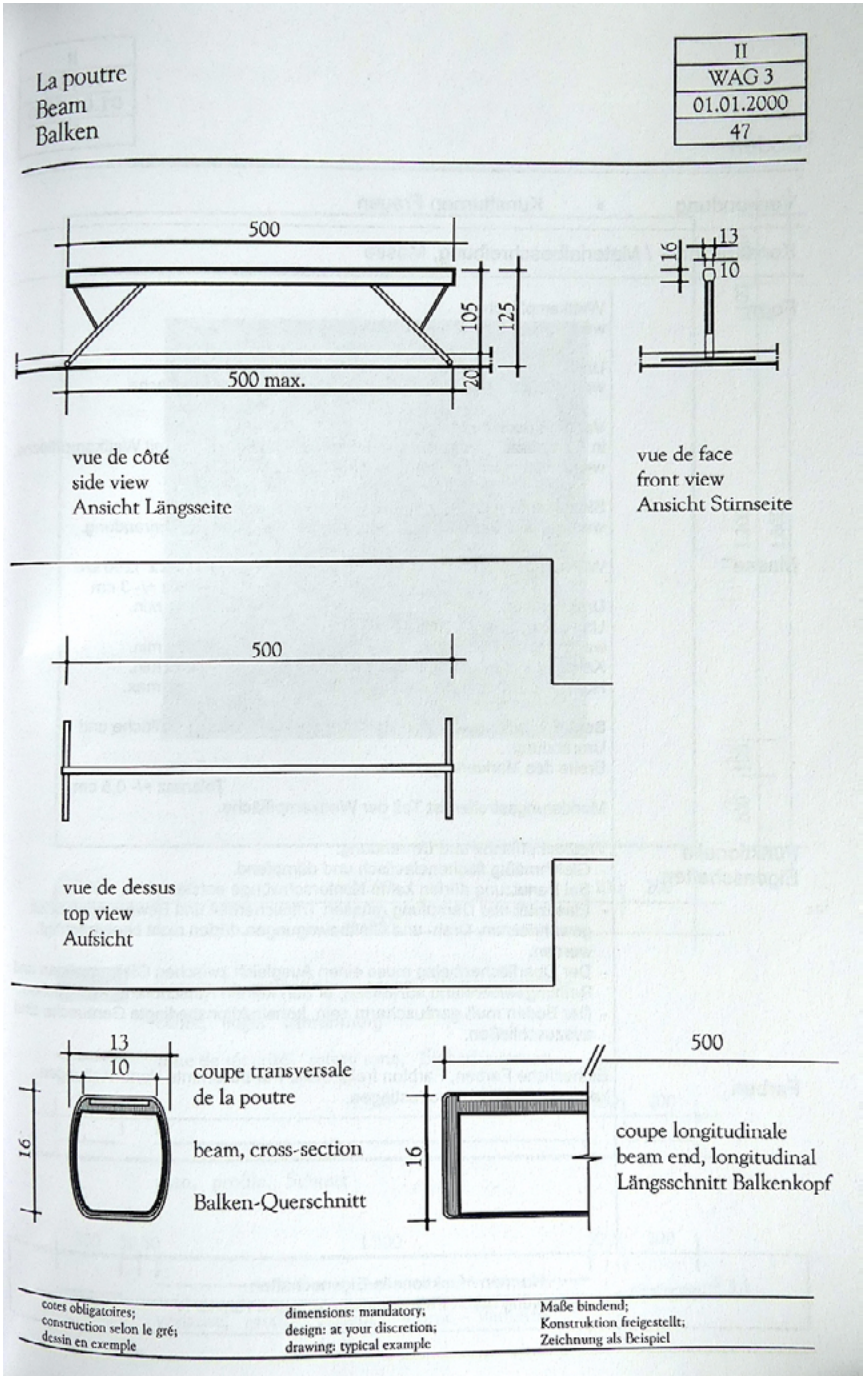
Rules to be adhered to:

1. Height of the beam must be from 700 to 1200 mm, adjustable in 50 mm intervals. The device for adjusting the height must not reduce in effectiveness when in use.
2. The base of the beam must be constructed in such a manner as to compensate for slight irregularities in the floor.
3. The stability of the apparatus, lengthwise and transversally requires the beam to rest on 4 struts (2 on each side).
4. These struts are placed under the two ends of the beam so that the area under the beam can be completely covered with mats.
5. The beam must be covered with an elastic layer (see sketch). Despite the elasticity the beam must be step and balance safe. The cover must be tear-proof and tightly fastened to the beam.
6. The ends must have the same cover material as the beam, seams and glue areas must be flawless and cannot interfere with the gymnast.

Balance beam



1974, Apparatus Norms



2000, Apparatus Norms

FLOOR EXERCISE.

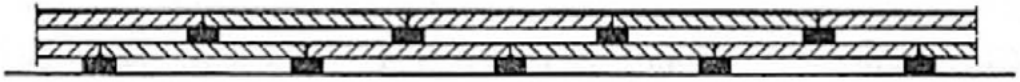
YEAR	SOURCE	DIMENSIONS	NOTES
1950	WC Rulebook	10 x 10 m	At the 1950 FIG Congress, Hungary proposed increasing the floor area to 12 x 12 m. It passed.
1952	OLY Rulebook	12 x 12 m	Space available to the gymnast must be marked out on the ground with white lines. It will consist of a plain floor having at least 14 x 14 m in the case of a raised floor.
1960	Apparatus Norms	IDEM	Double elastic floor of at least 14 x 14 m., covered with a carpet or soft felt of at least 12 x 12 m., which is 5 to 10 mm thick. The layer of felt should have a rubber layer on the floor side to prevent any slippage on the floor.
1965	Apparatus Norms	IDEM	Flexible floor 45 mm thick consisting of 60 plates of 2 m x 1.20 m to be joined together. The plates are of plywood construction with bottom rails and intermediate rails. The surface of each plate is covered with a glued layer of rubber, on which a canvas of resistant quality must be glued.
1974	Apparatus Norms	IDEM	The canvas is replaced by carpet that must be attached to the floor. Underneath there must be a soft layer of rubber that does not exceed 10 mm.
1979	Grossfeld, “Changes during the 110 Years of the World Championships”		In 1979, the first floor with coiled springs was used at an FIG event (i.e. the Fort Worth World Championships). The springs were about 5 cm high.

FLOOR EXERCISE.

YEAR	SOURCE	DIMENSIONS	NOTES
1980	ISO-5907-1980 ISO-5906-1980	12 x 12 m	The dimensions of the floor plates are the same as 1965. “At present, boards for floor exercise consist of an elastic layer of rubber or similar material fixed onto a box-frame construction made of plywood or similar material. It was decided not to give a more detailed description of the design in order to not violate existing patent rights and restrict development.” The floor covering is a series of mat-strips: 1,200 cm long x 150 cm wide x 2 cm high – or – 1,200 cm long x 200 cm wide x 2 cm high. A safety zone of 1 m shall be provided around the surface for floor exercises. It shall have the same material characteristics as the floor area and shall be clearly marked in a distinct color.
1989	Apparatus Norms	IDEM	There are sloping and non-sloping options for the safety zone. (See images.) Safety Border: Width: 100 cm min. Horizontal Area: 50 cm min. Slope: 20% maximum Height of outer border: 3.5 cm maximum Maximum height of floor if a sloped border is used: 13.5 cm (See diagrams on the following pages.) Strip for out of bounds: 5 cm, with the outer edge of the strip corresponding to the outer border of the 12 m performance area.

FLOOR EXERCISES (MEN AND WOMEN)

(EXERCICE AU SOL [HOMME ET DAMES])



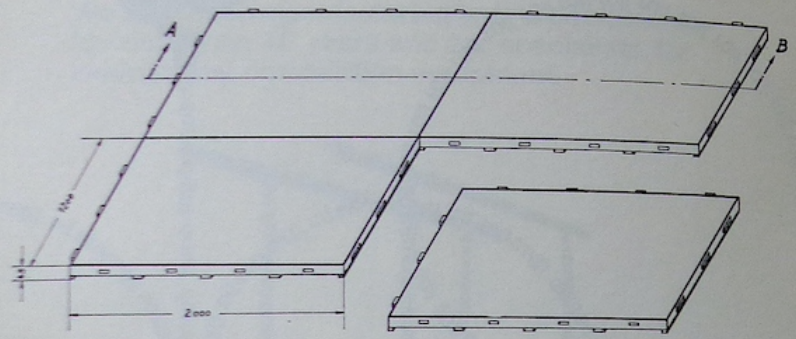
1. For the floor exercises we recommend a double elastic floor (see drawing) covered with a soft material.

2. While awaiting further experiments, a felt mat 12,000 x 12,000 mm and 5-10 mm thick should be made available. If desired, the mat should be covered with a canvas. The felt mat should have a rubber layer on the floor side to eliminate slipping.

3. For the floor exercises, a platform of at least 14,000 x 14,000 mm should be prepared, on which the 12,000 x 12,000 mm competitive area should be distinctly marked.

1961, Apparatus Norms, printed in the AAU Gymnastics Guide, 1962-1963

Ground-work
(men and women)



Organisers of F. I. G. competitions or similar competitions must provide a flexible board (floor) with the following measurements and specifications.

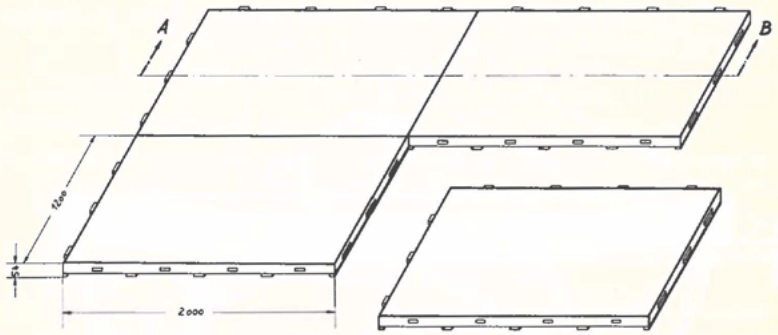
1. 12 000 × 12 000 × 45 mm consisting of 60 sections 2000 × 1200 × 45 mm joined together by means of lugs and corresponding slots.
2. The sections to be made of laminated wood with an intermediate cross beam and bottom rails. Each layer must be joined in such a way that the flexibility is uniform at any point on the surface.
3. The surface of each section must be covered with a layer of rubber glued on and over this there must be stuck a layer of firm strong cloth. (This is in order to avoid having to cover the whole 12 × 12 m with one cover, and also to enable the sections to be made up into a smaller area — 10 sections of 1200 × 2000 or 6 sections of 2000 × 1200 mm.)
4. This floor area, made of 60 sections, must be fitted in a framework of lengths of wood, 100 mm wide and 45 mm high, its upper surface oblique measuring from 45 mm to 0 mm at the bottom and outside.
5. This flexible flooring must be placed within an area measuring 14 000 × 14 000 mm.

6. This flexible flooring is also recommended for international meetings. If, because of the situation or other reasons, this is not possible, the organiser must provide a felt carpet or carpet of similar material, thick enough to deaden falls without prejudicing the stability of held positions. This carpet must be able to take a cover if necessary. The felt layer must be made in such a way as to prevent any slipping on the ground. The area alloved for the gymnast (12 000 × 12 000 mm) must be clearly marked out.

NB. Other details and specifications of the flexible flooring described under points 1 to 5 may be obtained manufacturers from the Technical President of F. I. G.

1965, Apparatus Norms – Thanks to Hardy Fink for supplying this image.

Double flex floor
for men and women



Organizors of FIG Competitions, or similar competitions, must provide the Double Flex Floor with the following measurements and characteristics:

1. Floor: 12000×12000×54 mm, consisting of 60 individual sections of 2000×1200×54 mm, joined together by lugs and corresponding slots.
2. These sections are constructed of plywood plates with rubber base. These layers must be joined in such a manner that each individual section has the same flexibility at any point of the upper surface.
3. The surface of each section must be covered with a soft layer of rubber, or any other material with the same traits.
   For safety reasons, the soft layer may not exceed a thickness of 10 mm. The soft layer must be covered with a carpet like material of good quality. The soft layer as well as the carpet must be attached to the underconstruction. This method will prevent having to stretch a rug over the entire surface and also enable the sections to be made up into smaller sections of 2000×12000 mm or 1200×12000 mm.

Double flex floor
for men and women

4. The double flex floor, made up of 60 individual sections, is held together with a wire rope tension with a minimum border of 500 mm wide. This border runs wedge shaped from outwards as far as floor height of 54 mm. To distinguish the actual floor area the gymnast uses, the border must be of a distinct different color.
5. If this floor is intended to be on an elevated podium, the area it is placed in must measure 14000×14000 mm.
6. The use of this floor is also recommended for **International Competitions**, if that is impossible however, due to lack of space or other reasons, the organizor must provide a felt carpet or one of similar quality, to deaden the falls of the gymnast, without prejudicing the stability and balance of a held position.
   This alternative solution must be as similar to the double flex floor as possible.
   The actual floor area must be clearly marked.

1974, Apparatus Norms

FIG APPARATUS NORMS

1.) FLOOR

2.) Use

For Floor Exercises in Artistic Gymnastics.

3.) Form

Performance Area:

Its surface must be horizontal, even and without gaps.

It can be higher or at the same height as the surrounding floor.
The height depends on the slope and width of the surrounding safety border.

Safety border:

It surrounds and borders the Performance area, distinctly and without gaps.

Measured from the performance area, up to 50 cm of its width extends horizontally, evenly and at the same height as the performance area.

The remaining width is sloped, up to a maximum of 3.5 cm in relation to the surrounding floor, naturally only, if there is a difference in height between the performance area and the surrounding floor.

The slope may not exceed 20 %.

The surrounding Floor

Measured from the outer border of the performance area, it must extend horizontally, evenly and without gaps for at least 200 cm.

FLOOR EXERCISE AREA

4.) Measurements

Performance Area:

Length and Width	1200 cm x 1200 cm * 3 cm
Height (in respect to surrounding area)	
In case of a 50 cm inclination border, the height is	13.5 cm maximum

If this height is exceeded, the border must be wider, since the slope may not exceed 20 %

Safety border

Width	100 cm minimum
Horizontal Area	50 cm minimum
Slope	20 % maximum
Height of outer border	3.5 cm maximum

Elimination Strip

Width	5 cm * 0.5 cm

The outer edges of the elimination strip must correspond with the outer border of the 1200 cm performance area.

5.) Adjustments

Not applicable.

6.) Functional Properties

Elasticity:

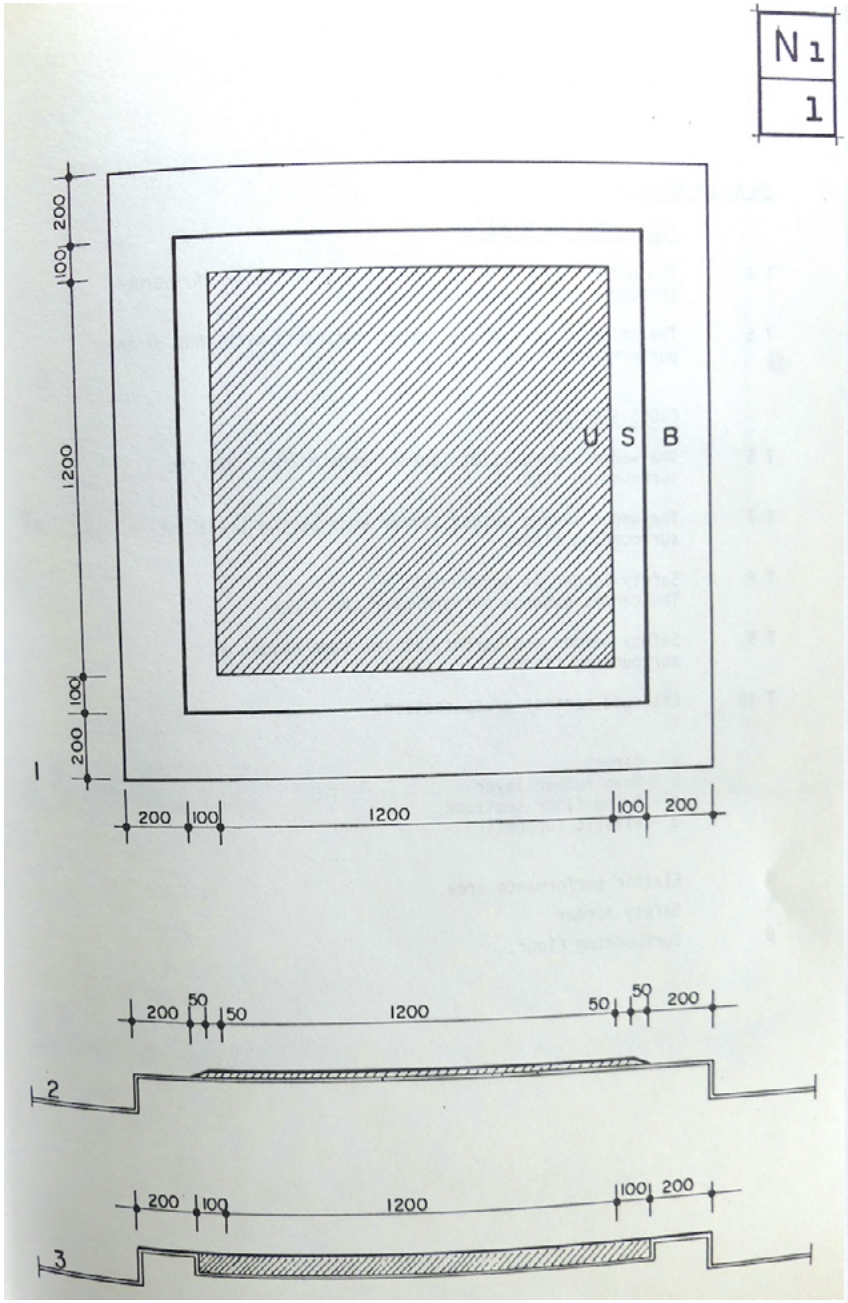
The performance area, at all points, must have a practical evenly distributed surface elasticity.

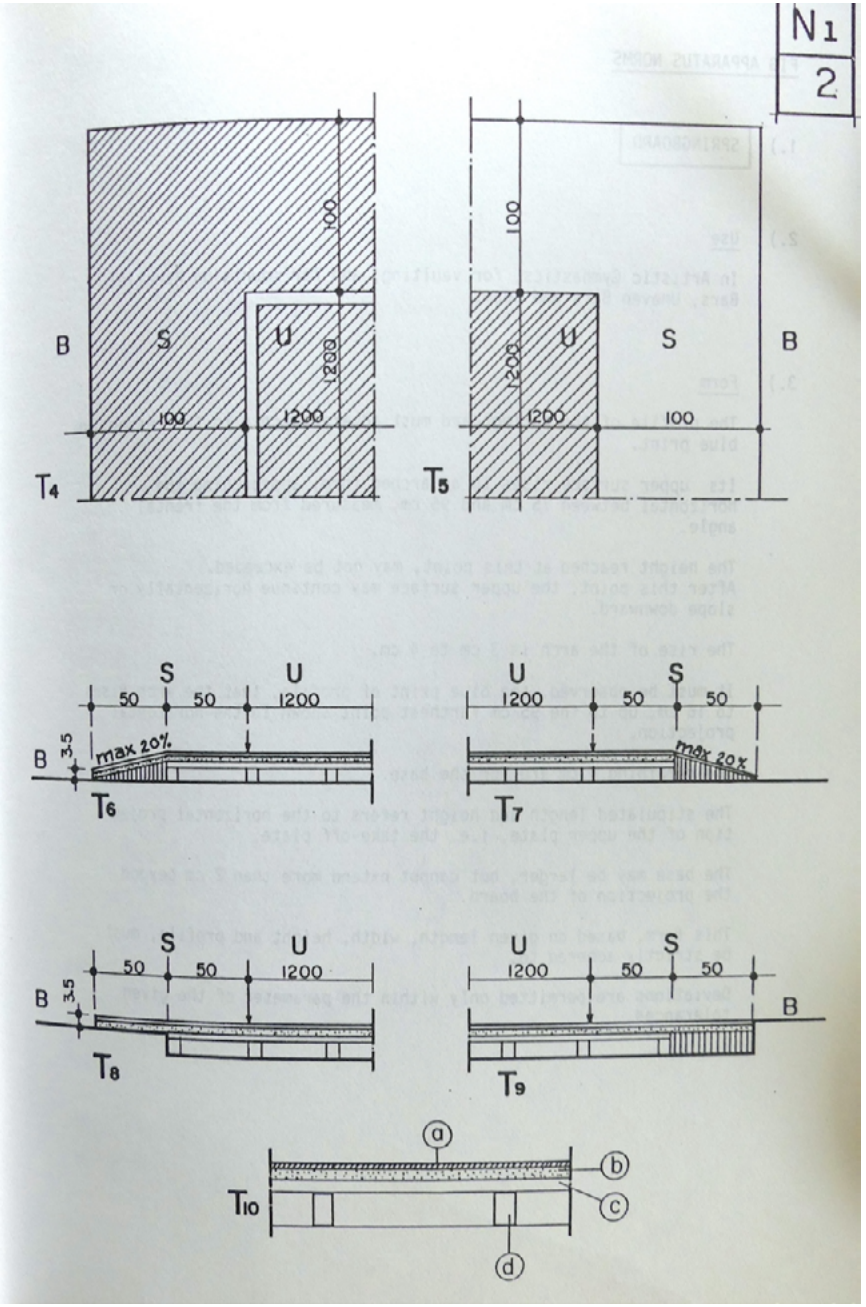
Absorbance

The performance area must reduce motion energy and have a dampening effect.

The safety border too, should possess these traits, at least up to a width of 50 cm, measured from the performance area.

1989, Apparatus Norms – Thanks to Hardy Fink for supplying this image.





1989, Apparatus Norms – Thanks to Hardy Fink for supplying this image.

LANDING MATS.

YEAR	SOURCE	VAULT	UNEVEN BARS	BALANCE BEAM	NOTES
1974	Apparatus Norms	6.0 to 6.5 cm	6.0 to 6.5 cm	6.0 to 6.5 cm	Material is up to the manufacturer. Cover: Non-Slip
1979	Apparatus Norms	12 cm	12 cm	12 cm	
1989	Apparatus Norms	IDEM	IDEM	IDEM	Note: In men's artistic gymnastics, with the exception of pommel horse, the mats were 20 cm thick starting in 1989.
1997	Technique, May 1997	20 cm	20 cm	20 cm	Note: The 20 cm mats were approved in 1997.
2000	Apparatus Norms	IDEM	IDEM	IDEM	Supplementary 5 cm and 10 cm mats were allowed.
2006	Apparatus Norms	IDEM	IDEM	IDEM	Supplementary 10 cm mats are allowed on uneven bars and beam. Supplementary 10 cm mat required on vault for the funnel-shaped landing zone.