INTERNATIONAL BOBSLEIGH RULES 2024

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In order to allow easy traceability of the changes compared to 2023 we have highlighted them in yellow.

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12. BOBSLEIGH CONSTRUCTIONS WITH DRAWINGS

General

The contents of the text are binding; the dimensions indicated in the drawings, diagrams and figures are compulsory.

The term 2-man Bobsleigh determines the disciplines 2-man Bobsleigh and 2-woman Bobsleigh. Both the terms „bobsleigh" and „bob" are used to define the same system of frame, cowling and runners.

12.1. Principles and Properties

12.1.1. Purpose of the Rules of 12.1

The purpose of the rules of chapter 12 is to promote the safety of the athletes participating in training and competition and of those present at IBSF events and to uphold a fair and honest competition.

12.1.2. Principles

a) Bobs have four runners (one pair of front runners and one pair of rear runners) and are used in competitions that are carried out on iced tracks.
b) To propel the bob, only the pushing force of the team, when starting and the force of gravity are allowed.
c) Three types of bobs are recognized: monobob (applies for the discipline Women's Monobob), 2-man bob (applies for disciplines 2-man Bobsleigh as well as 2-woman Bobsleigh) and 4-man bob.
d) Bobs must be cowled within the guidelines specified by these rules.
e) The rear part of the bobs must be open.
f) From the start (green light signal), no specifications of the bobs may be changed (damages excluded).
g) The driver's and side push bars must be fully retracted. Non-compliance may be punished.
h) It must be possible for the Jury or IBSF Material Controller to check the specifications of all constructive elements (axles, runner carriers, steering mechanism, articulation mechanism, etc.) without great technical effort. If any sled component or assembly will be judged as not complying with the Rules, this is to be justified in writing by indication of the relevant regulation.
i) During the course of IBSF events, the Jury may order checks on bobs and sports equipment.
j) The bob manufacturers are responsible for the construction of sleds that can withstand, without damage, the stress of repeated heats on the bob tracks.
k) For building bobs, it is forbidden to use transparent material, or any material that may shatter as a result of an impact.

l) For the purpose of the IBSF, the term "steel" means an alloy of iron and carbon with an iron (Fe) content of more than 50% by weight, or an alloy which reacts positively to the IBSF approved testing device.

m) No electronic, electric, electronically activated or wave activated components are allowed on the bob or the crew during official training or competition. The exceptions are those components approved by the IBSF and the relevant Jury.

n) With the exception of liquids or liquid-like fluids used for the purpose of lubricating the bearings and bushings of the frame, no liquids or liquid-like materials may be held in the frame or cowling or may in any way be attached to the frame or the cowling during an official IBSF event.

o) For the purpose of the IBSF, the terms rubber and/or rubber-like material mean a resilient material showing a hardness of less than Shore-D 100 on the ASTM D2240 Durometer test.

p) The term `plate´ is to denote a flat component of sheet material having a uniform thickness.

12.1.3. Bobsleigh Properties

12.1.3.1. Bobsleigh Functional Dimensions

The following main dimensions and constructive elements of the bobs are fixed. All dimensions refer to bobs without any load on a flat surface, if not specified to the contrary.

12.1.3.1.1. Gauge (centre to centre of opposite runners).

The gauge is the same for the front and rear runners, 670 mm ± 1 mm.

12.1.3.1.2. Axle base

Distance from the centre of the front axle to the centre of the rear axle (referred to the plane of symmetry of the bob): 1690 mm ± 30 mm (2-man bob); 2130 mm ± 30 mm (4-man bob).

12.1.3.2. Bobsleigh Miscellaneous Properties

12.1.3.2.1. Bobsleigh Suspension

There must be no rubber, rubber-like or energy absorbing materials in the runner carriers, frame and / or all other parts of the bob, apart from those specifically allowed by the IBSF rules.

12.1.3.2.2. Bobsleigh Brakes

All bobs must be equipped with a functioning braking system (Figure 20).

12.1.3.2.3. Ballast

a) Weight limit may be achieved by means of ballast. Ballast must be firmly welded or bolted or clamped to the sled by steel fastener. If ballast is not firmly welded or bolted or clamped to the sled by steel fasteners, it must be contained in a steel hollow profile. Such hollow

steel profile serving as a container for ballast must be firmly welded or bolted or clamped to the sled by steel fasteners. The size of any steel hollow profile serving as a container for ballast is limited to a cross-section of 50 x 50 mm and a length of maximally 400 mm. The use of tape or plastic straps (or cable ties) for the purpose of attaching any ballast to the sled is explicitly prohibited.

b) No liquids or liquid-like materials may be used as ballast materials.

12.2. Bobsleigh Construction and Functioning

12.2.1. Purpose of Rules of 12.2

The purpose of the Rules governing the construction and functioning of the equipment used is to promote that the equipment used in IBSF events is able to withstand the stresses of training and competition and that the equipment used provides adequate protection for those using the equipment. Furthermore, the paragraph 12.2 aims to promote a fair and honest competition. Finally, 12.2 is directed at controlling the cost of competing in IBSF events.

12.2.2. General Structure and Functioning

12.2.2.1. Articulation

12.2.2.1.1. Transversal Division

Every bob frame must be divided transversally between front axle and rear axle.

12.2.2.1.2. Pivotal Connection

a) The front portion and the rear portion of the bob are pivotally connected, the longitudinal pivot axis (2) being essentially parallel to the horizontal standing surface (1).

b) The angle between said longitudinal pivot axis (2) and the horizontal standing surface is must not exceed 5°.

12.2.2.1.3. Longitudinal Pivot Axis

a) The longitudinal pivot axis (2) is embodied by a longitudinal pivot bolt (3) of steel, having a middle circular cross-section with a minimum diameter of 30 mm (2-man bob) and 35 mm (4-man bob) that may taper to the ends to a minimum diameter of 21 mm (2-man bob) and 31 mm (4-man bob).

b) By means of said bolt (3), both bob portions are pivotally connected.

c) The pivot bolt (3) may have means of rotational elastic stabilization. For this purpose, rubber or rubber-like material may be used. These stabilizing elements must not contribute to any vertical movement. No hydraulic or pneumatic damping system is allowed.

d) If the pivot bolt (3) ahead or behind the division is enclosed by a box, each box must have a 20 mm diameter inspection hole accessible from the top.
e) At the dividing line, the longitudinal centerline of the longitudinal pivot axis (2) must be arranged at least 80 mm (2-man/2-woman and 4-man bobs, without crew and supported on runner carriers) above the standing surface.
f) The dividing line must be at a distance of 520 mm ± 50 mm (2-man/2-woman and 4-man bobs) behind the centre of the front axle.

12.2.2.1.4. Cowling division

The cowling must also be divided transversally. Rubber or rubber-like material may be used to cover the gap between the front and the rear parts of the cowling.

12.2.3. Frame and Running Gear

12.2.3.1. Purpose of the Rules of 12.2.3

The purpose of paragraph 12.2.3 is to control the sturdiness of the frame in the interest of safety and, in the interest of competition to control the amount of suspension provided to bobsleigh.

12.2.3.2. General Stipulations Frame

a) All joints in the frame must be rigid.
b) The front (4) and rear (31) frame must not be adjustable in stiffness during heats or between heats.

12.2.3.3. Front Portion of the Frame

a) The front portion of the bob must be constructed with a continuous (welded) supporting frame (4) made of steel and extending from the longitudinal bolt (3) at the transversal division line to the bearing housing of the steering bolt (5). All load bearing frame members and the bearing housing(s) of the steering bolt (5) and the bearing housing(s) of the longitudinal bolt (3) bolt must be welded to the frame.
b) The swivel angle of the front axle (9) (2-man/2-woman and 4-man bobs) in the vertical plane (referred to the standing surface) is limited to maximally ± 12°
c) The distance from the centre of the front axle (9) to the front tip of the bob is limited to: minimally - 600 mm (2-man/2-woman and 4-man bobs) and maximally - 750 mm (2-man/2-woman and 4-man bobs)
d) If the frame members and connecting profiles are made of tubing, they must remain hollow with no filling and have an inspection hole with a minimum diameter of 8 mm.

12.2.3.3.1. Steering mechanism

a) A rotating steel steering bolt (5) is fitted to the front frame (4) and rotates by means of a steering mechanism. The said steering bolt must not exceed 5° from vertical.

b) The bearing housing of the steering bolt must be completely welded to the frame, on all sides.

c) The lower end of the steering bolt is fully welded to a steel steering plate (6) perpendicular to the steering bolt, which must have a minimum thickness of 7.5 mm over its entire surface and a minimum width of 69 mm over half its length (2-man and 4-man bobs). A central access hole is allowed. In addition four maximum 10 mm holes on each side are allowed only to attach the steering stop and the brackets. Other holes are prohibited.

d) On this steering plate (6), at a bolt (7) lying in front of the axle (9) and at a bolt (8) lying behind the axle (9), steel flanges (11a and 11b) are pivoted on a pivot axis (10) that is perpendicular to the front axle (9) and perpendicular to the steering bolt (5).

e) The minimum diameter of the bolts (7 and 8) must be 20 mm.

f) There must be no vertical motion between the fixed bearing and the rotating support.

g) A continuous, one-piece steel bottom plate (14) is mounted below the axle (9) with a minimum thickness of 7.5 mm (2-man/2-woman and 4-man bobs) throughout the surface of the plate and a minimum width of 69 mm (2-man/2-woman and 4-man bobs). On each end of the plate for a length of 20 mm a chamfer or rounding is allowed. The bottom plate 14 may be bent over a lateral axis not more than two times.

h) The bottom plate (14) is firmly bolted (15), with no free play, to both steel flanges (11a, 11b) with a continuous basic thread and a torque of at least 25 NM for M8 and 45 NM for M10 (15). Minimum two bolts each side with minimum M8. Movement of the steel flanges relative to the bottom plate (11a and 11b) is not allowed.

i) No rubber may be placed between the respective flanges (11a, 11b) and the bottom plate in accordance with figure 9a and 15a.

j) For any further compensation, only steel and / or aluminum shims may be used.

k) The free length of the bottom plate (14) between the two flanges (11a and 11b) in the longitudinal direction of the bob is 220 mm ± 40 mm (2-man/2-woman and 4-man bobs).

l) The flanges (11a and 11b) can be provided with U-shaped guiding elements.

m) For the purpose of returning the runners in a neutral position, rubber or rubber-like materials may be used in the steering mechanism.

12.2.3.3.2. Front Axle

a) The front axle (9) consists of a continuous, straight, circular steel tube manufactured from a single piece of steel having a diameter 45 mm +/- 1 mm (2-man/2-woman and 4-man bobs), which reduces to a minimum of 32 mm (2-man/2-woman and 4-man bobs) to fit the bearing of the front runner carrier (17).

b) The 45 mm +/-1 mm diameter portion of the axle must have a minimum wall thickness of 9 mm and a minimal length of 450 mm.

c) In its middle portion, the front axle (9) has a steel fastening plate (18) having a width 95 mm (+/- 26 mm), a length of 70 mm (+/- 20 mm) and a thickness of 9 mm (+/- 1,5 mm) that must be strongly welded (not screwed) to it and firmly bolted to the bottom plate (14) by at least 4 bolts with a core diameter of at least 6,5 mm.

d) Steel spacers are allowed between the axle fastening plate and the bottom plate.

e) The fastening plate (18) may be recessed flush to the circumference of the front axle (9).

f) A steel plug may be welded or pressed into each end of the axle (9) to provide attachment for the runner carrier retainer.

g) If a steel plug is used in the end of the axle, it must have a through-hole with a minimum diameter of 8.5 mm.

h) The front axle (9) must not be clad, cased or streamlined.

i) No additional holes and reinforcements may be permitted. At the end of the axle only two additional holes can be made to fix steel pins.

12.2.3.3.3. Front Axle Leaf Spring

a) Between the steering plate (6) and the front axle (9) there is a continuous steel leaf spring (19) with a minimum thickness throughout of 6 mm.

b) The points at which the leaf spring (19) rests on the front axle (9) must be symmetrically at least 330 mm from each other (2-man/2-woman and 4-man bobs).

1. The leaf spring can be made of three pieces.
2. The brackets must have an axial width of min. 12 mm. The brackets must be screwed with a minimum number of two M8 screws.
3. The radius of the brackets will not be limited.

4. Steel spacers with full contact area are allowed between spring plate and bracket. The spacer must have the same area as the brackets.
5. Brackets must be made of steel.

When the axle is in a neutral position, there must be no free play between the leaf spring (19) and the steering plate (6) or between the leaf spring (19) and the axle (9).

No spacers are allowed between the leaf spring (19) and the steering plate (6) or between the leaf spring (19) and the axle (9).

12.2.3.3.4. Front Runner Carriers

a) Each front-runner carrier consists of a straight steel spring leaf (17) with a thickness of no less than 7.5 mm throughout (2-man/2-woman and 4-man bobs).
b) The distance from the standing surface of the front runner carriers to the axle centre is limited to maximally 100 mm.
c) A bearing housing (16) for the front axle (9) must be welded to the upper side of the spring leaf (17).
d) On the lower part of the spring leaf (17) there will be a guiding bracket (21) welded in the centre.
e) On either end of the spring leaf (17) there will be holding brackets (22 and 23) welded in position.
f) The bearing housing (16) has a minimum outside diameter of 50 mm (2-man/2-woman and 4-man bobs) and a maximum outside diameter of 55 mm (2-man/2-woman and 4-man bobs).
g) The length of the bearing housing (16) is no less than 94 mm (2-man/2-woman and 4-man bobs).
h) The hole in the bearing housing (16) must be concentric with respect to a horizontal diameter.
i) The distance from the outer end of the bearing housing (16) to the straight outer edge of the front-runner carrier (17) must not exceed 6 mm.
j) As seen in the top view, the outer side of the front-runner carrier (17) must be straight and perpendicular to the axle (9); the outer side of the spring leaf and guiding bracket must essentially fall above one another (No offset is allowed).
k) The length of the front-runner carrier (17) is 655 mm ± 3 mm (2-man bob), 735 mm ± 3 mm (4-man bob).
l) The width of the front-runner carrier (17) must be no less than 35 mm (2-man/2-woman and 4-man bobs) at the front and rear ends and must increase towards the centre to its maximum width, which

must be no less than 69 mm (2-man bob) and no less than 89 mm (4-man bob).

m) In a top view, the inside edge of the front-runner carrier (17) facing the cowling must not be concave.

n) The front and rear holding brackets (22 and 23) have a U-shaped cross section, where the "bridge" of the U is welded to the runner carrier (17) and has a minimum thickness of 7.5 mm.

o) The two U legs extend vertically downward with a height of 50 mm ± 2 mm. The outside dimensions of the U legs are 30 mm ± 2 mm.

p) The length of the holding brackets (22 and 23) is 70 mm ± 2 mm.

q) The holding brackets (22 and 23) must be provided with runner mounting holes, the centre of which must be 31 mm ± 1 mm from the lower side of the runner carrier (17). The runner mounting holes must be symmetrical within 1 mm to the front and rear of the holding brackets (22 and 23).

r) Only the holes (24 and 25) for the head of the bolts may be countersunk.

s) The hole centers of the front and rear holding brackets (22 and 23) have a centre distance of 585 mm ± 2 mm (2-man bob) and 665 mm ± 2 mm (4-man bob).

t) The middle guiding bracket (21) has the same dimensions as the holding brackets (22 and 23), with the exception that the U legs are connected by welded metal straps, front and rear, to hold a layer of rubber or rubber-like material at the bottom of the U (26).

u) The middle guiding bracket (21) may be additionally supported to the spring leaf.

v) The centre of the bearing housing (16) may be a maximum of 5 mm out of symmetry between the runner mounting holes (2-man/2-woman and 4-man bobs).

w) The runner carriers (17) must have a means of rotational elastic stabilization.

x) If the rotational stabilization is mounted from the bottom of the runner carrier, the opening in the spring leaf may not exceed a length of 35 mm and must be within the welds of the bushing to the spring leaf.

y) The front-runner carriers (17) must not be cased, clad, faired or streamlined.

z) All edges of the spring leaf, guiding brackets (21) and holding brackets (22 and 23) may be radiused or chamfered to a maximum of 8 mm.

12.2.3.4. Rear Portion of the Frame

a) The rear bob portion must be constructed with a continuous (welded) supporting frame (31), made of steel and extending from the longitudinal pivot bolt (3) at the transversal division line to the fastening means for the rear axle. All load bearing frame members and the bearing housing(s) of the longitudinal bolt (3) must be welded to the frame.

b) From the division line to 330mm behind the rear axle, the longitudinal frame members must be made of closed steel profile must be tightly welded around entire diameter and from all sides to the fastening means of the rear axle. The longitudinal frame members must have a minimum section area of 703 mm2; the largest dimension of the said frame member must be at least 37 mm. The smallest dimension of the said frame member must be at least 19 mm. The longitudinal frame members may be extended by 330mm behind the rear axle. The rear part of the frame must not be adjustable in geometry and stiffness at any time.

c) If the longitudinal members are made of tubing, they must remain open with no filling. Inspection holes with a minimum diameter of 9 mm must be located at the division box towards the rear axle as well as at the end of the rear portion of the frame, so that an inspection of the frame with a camera is possible.

d) The minimum distance between the two longitudinal members of the rear frame will be 320 mm.

e) Where the axle is fastened to the rear frame, there will be a defined contact area between the axle mounts and the axle. In any case the contact area between the axle and each axle mount must be at least 700 mm2.

f) In case the axle is fastened to the frame by means of bolts, full contact between the axle and the axle mounts must exist for a distance of a minimum of 15 mm around the fastening hole.

g) In case the axle is fastened to the frame by means of clamps, full contact between the axle and the axle mounts must exist over at least 150 degrees of the circumference of the axle and over a length of at least 25 mm.

h) The minimum distance between the bolt connections will be 165 mm. The axle must be firmly bolted to the axle mount. No movement between the axle and the axle mount is allowed.

12.2.3.5. Intentionally left blank

12.2.3.6. Rear Axle

a) The rear axle (27) consists of a continuous, straight, circular steel tube manufactured from a single piece of steel having an outer diameter that is 45 mm (+/- 1 mm) (2-man/2-woman and 4-man

bobs), which reduces to a minimum of 32 mm (2-man bob) and 34 mm (4-man bob) to fit the bearing (28) of the rear runner carrier (29).

b) The 44 mm diameter portion of the axle must have a minimum wall thickness of 9 mm and a minimum length of 450 mm.
c) The rear axle (27) must be firmly bolted to the rear frame (31) without any resilient or shock absorbing material in between. Horizontal bolts are not permitted.
d) Steel spacers are allowed. Steel spacers must have permanent contact surface of 700 mm 2 on each side to reach correct geometry only, without additional elements that perform some other function.
e) The rear axle (27) can be bolted either above or below the rear frame (31) (2-man/2-woman and 4-man bobs). The bolt connection has a minimum distance of 165 mm.
f) A steel plug may be welded or pressed into each end of the axle to provide attachment for the runner carrier retainer.
g) If a steel plug is used in the end of the axle, it must have a 6.5 mm through-hole.
h) The rear axle (27) must not be clad, cased or streamlined.
i) Material control can be done at any time and in any position.

12.2.3.6.1. Intentionally left blank

12.2.3.6.2. Runner Carriers

a) Each rear runner carrier consists of an upper and lower straight steel spring leaf (32 and 33) with a thickness of no less than 7.5 mm throughout (2-man/2-woman and 4-man bobs).
b) The vertical distance from the standing surface of the rear runner carriers to the axle centre is limited to maximally 110 mm.
c) A bearing housing (28) for the rear axle must be welded to the upper side of the upper spring leaf (32).
d) On the lower side of the lower spring leaf (33) there will be a guiding bracket (34) welded in the centre.
e) On either end of the lower spring leaf (33) there will be holding brackets (35 and 36) welded in position.
f) The bearing housing (28) has a minimum outside diameter of 50 mm (2-man/2-woman and 4-man bobs) and a maximum outside diameter of 55 mm (2-man bob) and 57mm (4-man bob).
g) The length of the bearing housing (28) is no less than 94 mm (2-man/2-woman and 4-man bobs).
h) The hole in the bearing housing (28) must be concentric with respect to a horizontal diameter.

i) The distance from the outer end of the bearing housing (28) to the straight outer edge of the upper spring leaf (32) must not exceed 6 mm.

j) As seen in the top view, the outer side of the lower spring leaf (33) must be straight and is essentially perpendicular to the axle (27); at the centre of the runner carrier, the outer side of the upper spring leaf (32), lower spring leaf (33) and guiding bracket must essentially fall above one another. (No offset is allowed.)

k) The length of the lower spring leaf (33) is 813 mm ± 3mm (2-man bob) and 940 mm ± 3 mm (4-man bob).

l) The width of the lower spring leaf (33) must be no less than 35 mm (2-man/2-woman and 4-man bobs) at the front and rear ends and must increase towards the centre to its maximum width, which must be no less than 79 mm (2-man bob) and no less than 89 mm (4-man bob).

m) In a top view, the inside edge of the lower spring leaf (33) facing the cowling must not be concave.

n) The front and rear holding brackets (35 and 36) have a U-shaped cross section, where the bridge of the U is welded to the lower spring leaf (33) and has a minimum thickness of 7.5 mm.
    a. The two U legs must extend vertically downward with a height of 50 mm ± 2 mm.
    b. The outside dimensions of the U legs must be 30 mm ± 2 mm.

o) The length of the holding brackets (35 and 36) must be 70 mm ± 2 mm.

p) The holding brackets (35 and 36) must be provided with runner mounting holes, the centre of which must be 31 mm ± 1 mm from the lower side of the spring leaf (33). The runner mounting holes must be symmetrical within 1 mm to the front and rear of the holding brackets (22 and 23).

q) Only the holes (35 and 36) for the head of the bolts may be countersunk.

r) The hole centers of the front and rear holding brackets (35 and 36) must have a centre distance of 743 mm ± 2 mm (2-man bob) and 870 mm ± 2 mm (4-man bob).

s) The middle guiding bracket (34) has the same dimensions as the holding brackets (35 and 36), with the exception that the U legs are connected by welded metal straps, front and rear, to hold a layer of rubber or rubber-like material at the bottom of the U (34).

t) The middle guiding bracket (34) may be additionally supported to the spring leaf (33).

u) The centre of the bearing housing (28) may be a maximum of 5 mm out of symmetry between the runner mounting holes (2-man/2-woman and 4-man bobs).

v) The upper spring leaf (32) is shorter than the lower spring leaf (33) and has a length of 480 mm ± 3 mm (2-man bob) and 590 mm ± 3 mm (4-man bob).

w) The minimum width at the front and rear ends of the upper spring leaf (32) is 40 mm and must increase towards the centre to its maximum width, which must be no less than 79 mm (2-man bob) and 89 mm (4-man bob).

x) In the top view, the upper spring leaf must have no concave edges.

y) The upper (32) and lower (33) spring leafs lie flat on one another and are bolted together by no less than 6 and no more than 8 bolts with hexagonal nuts.

z) There must be the same number of bolts on either side of the bearing housing (28).
   a. Only the holes for the head of the bolts may be countersunk.
   b. The minimum diameter of the bolts must be 12 mm (2-man bob) and 14 mm (4-man bob).
   c. The minimum height of the hexagonal nuts must be 10 mm (2-man bob) and 11 mm (4-man bob).

aa) The runner carriers (29) must have a means of rotational elastic stabilization. If the rotational stabilization is mounted from the bottom of the runner carrier, the opening in the spring leaf may not exceed a length of 35 mm and must be within the welds of the bushing to the spring leaf.

bb) The runner carrier (29) must not be cased, clad, faired or streamlined.

cc) All edges of the spring leafs (32 and 33), guiding brackets (34) and holding brackets (35 and 36) may be radiused or chamfered to a maximum of 8 mm.

12.2.4. Cowling

12.2.4.1. Purpose of 12.2.4

The purpose of paragraph 12.2.4 is to promote the safety of the athletes competing in IBSF events by attempting to ensure that the cowling of a bobsleigh will provide sufficient protection in case of crashes. Furthermore, the Rules of 12.2.4 aim to promote a competition without unfair aerodynamic advantages.

12.2.4.2. General Cowling Stipulations

a) The brake cut-out must be open.
b) No attempt may be made to reduce the area of the cut-out with any material, except padding in accordance with rule point 12.2.8.7 Padding Materials.
c) Any unusual additions to the shape that are clearly vortex generators are not allowed.
d) Additional holes that may give an improved aerodynamic effect are also not allowed.
e) The cowling provides adequate protection for the athletes.

12.2.4.3. Cowling Dimensions

12.2.4.3.1. Cowling Width, 2-man Bobsleigh

The distance from the farthest point to the opposite farthest point (measured on the horizontal plane according to Figure 2 of the drawings) must be:

a) At a distance of 1200 mm in front of the centre line of the rear axle: minimally - 680 mm.
b) At a distance of 600 mm from the centre line of the rear axle: minimally - 640 mm.
c) At the centre line of the rear axle: minimally - 540 mm.

12.2.4.3.2. Cowling Width, 4-man Bobsleigh

From the centerline of the rear axle up to a distance of 1600 mm in front of the centerline of the rear axle, a constant minimum width of 700 mm must be maintained.

12.2.4.3.3. Inside Cowling Width 2-man and 4-man Bobsleigh

Measured at a height of 400 mm from the bottom of the bob, at the beginning of the cowling cut-out, the inside cowling width must be minimally 550 mm (2-man and 4-man Bobsleigh).

12.2.4.3.4. Cowling Height

a) Thee e-out must be minimally 650 mm (2-man/2-woman and 4-man bobs).

12.2.4.3.5. Cowling Side Region

a) The side cowling, from the region of the driver's shoulders to the centre of the rear axle, must not be higher than 650 mm as measured from the bob bottom and must have a minimum height of 580 mm.
b) The cowling must be open – starting from the region of the driver's shoulders, through to the back.

c) The width of the opening, starting 500 mm behind the beginning of the opening to the rear axle centre, must be minimally 450 mm down to a depth of 300 mm (2-man/2-woman and 4-man bobs).

d) From the centre of the rear axle to the hindmost point of the bob, the width of the opening must be minimally 400 mm measured down to a point 300 mm above the lowest point of the bottom of the bob (2-man/2-woman and 4-man bobs).

12.2.4.3.6. Cowling Miscellaneous

a) From the highest part of the driver's cut-out, there must be a vertical flange as shown in Figure 4. The vertical flange must be a minimum height of 30 mm in the centre of the driver's cut-out. The flange may taper down to the thickness of the cowl over a distance of 100 mm on either side of centre.

b) The rectangular, symmetrical inspection hole situated beneath the front axle must be at least 440 mm long and at least 160 mm wide.

c) On either side, a rubber or rubber-like membrane may be used to close the gap between the front axle and the cut-out for the front axle.

d) On the top of the brake housing, a rubber or rubber-like membrane may be used around the handles.

12.2.4.4. Cowling Shapes

12.2.4.4.1. Purpose of 12.2.4.4

The purpose of paragraph 12.2.4.4 is to promote a competition without unfair aerodynamic advantages.

12.2.4.4.2. Convex Surfaces

The cowling shape must be convex in the following areas:

a) From the front of the bob to the driver cut-out, every intersection line between a rotating cutting plane and the cowling, refer to Figure 3A.

b) From the front of the bob to the rear of the bob, every intersection line between the vertical cutting planes and the cowling above the widest point or at least above the bumpers, refer to Figure 3B.

c) From the beginning of the driver's cut-out to the rear of the bob, the intersection line between a horizontal cutting plane and the cowling, at a height of 350 mm above the standing surface of the runner carriers, refer to Figure 3C.

d) On the bottom of the bob, every intersection line between a longitudinal vertical cutting plane as well as every intersection line between a perpendicular vertical cutting plane and a 240 mm wide symmetric band centered on the bottom of the bob. Outside of the

240 mm band, the only exceptions would be the impressions created for the runner and the runner carrier clearance, refer to Figure 3D.

The following exceptions apply:

a) The bumpers (front and back)
b) The brake cut-out
c) The impression for the driver's push handle
d) The articulation joint
e) The holes for the front and back axles
f) The transition from the side push bar into the main body of the cowling (fig.7)
    a. if the pushbars are mounted directly to the top of the side of the main body of the cowling: From a vertical plane 450 mm forward of the axis of rotation and a height of 670 mm above the standing surface of the runner carriers.
    b. if the pushbars are mounted to a separate stanchion intersecting the main body of the cowling: In a radius of 400 mm from the center at the top of the axis of rotation of the push bar.
g) & h) The area around the brakeman's push handles that is within a radius of 250 mm from the point of the brakeman's push handles farthest removed from the centerline of the rear axle.

12.2.5. Connection between Frame and Cowling

12.2.5.1. Purpose of 12.2.5

The purpose of 12.2.5 is to control the amount of suspension that can be achieved in the connections between cowling and frame.

12.2.5.2. Definition of Connection between Cowling and Frame

All elements that mechanically attach the cowling as defined and controlled by 12.2.4 to the frame as defined and controlled by 12.2.3 are considered to jointly form the connection between cowling and frame and to be controlled by 12.2.5.

12.2.5.3. General Stipulations

a) Any measurements with regard to travel of the cowling relative to the frame are relative to the horizontal plane of reference, with the bobsleigh in an unloaded condition.
b) Within the context of 12.2.5, the term 'downward' is used with reference to the unloaded condition of the bobsleigh while positioned on a horizontal reference plane.
c) Within the context of 12.2.5, the limitation of freedom of movement of the cowling relative to the frame is defined with reference to the unloaded

condition of the bobsleigh while positioned on a horizontal reference plane.

d) Article 12.1.3.3.1 (Bobsleigh suspension) applies.

12.2.5.4. Locations of points of mounting of Cowling to Frame

a) The cowling must be attached to the frame by means of four (2- man) and a maximum of eight (4-man) mounting brackets that to restrict the vertical movement of the cowling relative to the frame. No additional mounting means allowed.

b) Two of these four mounting brackets must be positioned symmetrically relative to the plane of symmetry of the bob, in a vertical plane that is perpendicular to the plane of symmetry of the bobsleigh and within 100 mm of most forward part of the rear part of the frame excluding the articulation bolt (Figure 23).

c) Two of the rear mounting brackets must be positioned symmetrically relative to the plane of symmetry within 330 mm backward and 120mm forward of the centerline of the rear axle of the bob and must be mounted on or to the outside of the longitudinal frame member. If the base of the fastening brackets is not glued to the cowling, but screwed, then the screws must not move and this connection must not move (Figure 23).

12.2.5.5. Freedom of Movement of Cowling relative to Frame

a) The movement of the cowling relative to the frame, allowed by the fastening brackets of the cowling controlled by 12.2.5.4 and 12.2.5.6 must be limited to 5 mm in the downward direction by use of travel stops.

b) Irrespective of the suspension elements used within the context of 12.2.5.4 and 12.2.5.6, the travel of these suspension elements must be limited by hard travel stops of sufficient rigidity to guarantee effective limitation of cowling movement.

c) The forward travel stops limiting the vertical movement of the cowling must be fully positioned within the confines of 12.2.5.4. Travel stops must be integral part of mounting bracket.

d) The rear travel stops must be mounted on or to the outside of the longitudinal frame member and completely within 120 mm forward and backward of the centerline of the rear axle (Figure 23 - still valid including the 2025/2026 season for AC, EC and NAC).

e) The rear travel stops must be integral part of the fastening bracket mounted on or to the outside of the longitudinal frame member and completely within 330 mm backwards and 120 mm forward of the centerline of the rear axle (Figure 23).

12.2.5.6. Materials used in Cowling to frame Connection

a) In the mounts between the cowling and the frame, rubber or rubber-like material may be used.
b) The rubber or rubber-like material used in the connection between frame and cowling must be homogeneous.

12.2.6. Bumpers

12.2.6.1. Purpose of 12.2.6

The purpose of 12.2.6 is to attempt to ensure that the elements of the bobsleigh that come into contact with the walls of the track are suitable for that purpose. Furthermore, 12.2.6 aims to promote that no unfair aerodynamic advantages can be achieved. Finally art. 12.2.6. is directed to preserve the integrity of the track.

12.2.6.2. General Stipulations

It is the responsibility of the bob manufacturers to produce the bumpers with sufficient strength to withstand repeated contact with the walls.

12.2.6.3. Bumper Positions and Dimensions

a) The front tips of the front-runners must be covered by the cowling in any position of the runners.
b) Distance from the standing surface of the runner carriers to the lower edge of the bumpers is limited to:
    a. Front bumpers:
        maximally 190 mm (2-man bob);
        maximally 200 mm (4-man bob);
    b. Rear bumpers:
        maximally 200 mm (2-man bob and 4-man bob).
c) The rear bumpers must have a minimum height of 50 mm (measurement taken vertically with regard to the standing surface) over a length of minimum 200 mm.
    The rear bumpers must not exceed a maximum length of 600 mm in the two-man/two woman bob and 900 mm in the four-man bob (measured from the rearmost point of the bumper).
d) The centre of the front bumpers, referring to a length of 300 mm, must be at least 300 mm from the centre of the front axle (2-man/2-woman and 4-man bobs).
    The front bumpers may have a maximum length of 1000 mm (measured from the foremost point of the bobsled cowling).
e) Above the front bumper 300 mm forward from the centre of the front axle, the distance from the outside of the bumper to the cowling, measured horizontally and perpendicular to the centre line of the bob, must not

exceed 195 mm (2-man/2-woman bob) and 160 mm (4-man bob), refer to Figure 2.

f) The distance from the farthest point of one bumper to the farthest point of the opposite bumper must be:
   a. Front:
      860 mm ± 10 mm (2-man bob);
      870 mm ± 10 mm (4-man bob).
   b. Rear:
      Minimally 800 mm (2-man bob).
      Minimally 830 mm (4-man bob).

g) The distance from the centre of the rear axle (27) to the hindmost point of the rear bumper must be:
   a. Minimally - 300 mm (2-man/2-woman and 4-man bobs);

12.2.6.4. Maximally - 760 mm (2-man/2-woman and 4-man bobs). Bumper Shapes

a) The upper and lower edges of the rear bumpers must have a radius of between 5 and 8 mm.

b) The lower edge of the front bumpers (Figure 5) must have a radius of no less than 10 mm for a minimum length of 300 mm. In an upward direction they must be straight for a minimum length of 35 mm, subsequently passing into the upper edge with a minimum radius of 35 mm.

c) The point at which the bumper contacts the wall must be within the defined minimum length of the bumper. In a top view, the bumpers must be arc-shaped with a minimum radius of 200 mm for a distance of 100 mm ahead and behind the widest part of the bumper area (Figure 6).

12.2.6.5. Transitions to Cowling

a) The connecting elements between the front bumpers and the bob cowling must have a height of a minimum of 80 mm over the minimal length of the front bumpers.

b) The connecting elements between the rear bumpers and the cowling must have a height of a minimum of 50 mm over the minimal length of the rear bumpers.

c) In a top view and in a side view the front of the connecting elements of the front bumpers must form a continuous, not concave line with the tip of the cowling.

12.2.7. Runners

12.2.7.1. Purpose of 12.2.7

Purpose of 12.2.7 is to promote a fair competition while controlling the costs of participating and administering in IBSF events by banning the use of exotic materials and (surface) treatments.

12.2.7.2. Runner material

a) All runners must be produced in a solid piece of standard material according to IBSF specifications and must not exceed the hardness of 385 Brinell (HB).
b) The material specifications, selected by the IBSF, will guarantee that all pre-machined pieces of steel are the same.
c) The standard material is produced and distributed by a factory designated by the IBSF
d) The material is supplied in the form of a pre-machined section, i.e. a section that has been ground on both sides, one of which is marked.
e) The marking must always be present on the runners without being changed in any way.

12.2.7.3. Runner Treatment

a) All types of treatment are forbidden, including those that even cause only a local variation of the physical characteristics and/or the composition and/or the structure of the material.
b) No plating and/or coating is allowed.

12.2.7.4. Runner Dimensions

a) The height of the steel body, between the front and rear fastening brackets, must be a minimum of 35 mm (2-man bob) and a minimum of 40 mm (4-man bob).
b) The forward portion of the runner from 50 mm behind the tip to the front of the front fastening bracket must be no less than 29 mm high (2-man/2-woman and 4-man bobs).
c) The front tip of the runner, in the side view, must have a minimum radius of 10 mm (2- and 4-man bobs).
d) The top of the front-runner tip must be a minimum of 57mm above the standing surface.
e) The rear lower tip of the runner must have a minimum radius of 50 mm (2-man/2-woman and 4-man bobs).
f) At a distance of 10 mm from the rear tip of the runner, the lower surface must be a minimum of 25 mm above the standing surface (2-man/2-woman and 4-man bobs).

g) The distance from the front tip of a front runner to the centre of the middle supporting bracket must be 500 mm ± 30 mm (2-man/2-woman bob) and 540 mm ± 30 mm (4-man bob).

h) The overall length of the rear runners must not exceed 1200 mm (2-man/2-woman bob) and 1300 mm (4-man bob).

i) The top surface of the middle supporting bracket must be flat and horizontal and must form a rectangle, minimum width 13 mm, minimum length 60 mm. The 60 mm dimension must be maintained down to the top of the runner.

j) The top of the middle supporting bracket must be a minimum of 15 mm above the top of the runner.

k) At the intersections of the middle supporting bracket with the top surface of the runner, there must be a minimum radius of 2 mm.

l) The runner must have a thickness of 14 mm ± 1 mm (2-man/2-woman and 4-man bobs). This thickness must be maintained for a minimum distance of 10 mm from the top of the runner.

m) The cross-sectional radius of the runner, at the running surface, must be a minimum of 4 mm and a maximum of 7,5 mm (2-man bob) and a minimum of 6 mm and a maximum of 7,5 mm (4-man bob). This radius will be measured over 120° and will correspond to an arc height of 2 mm (2-man/2-woman bob) and 3 mm (4-man bob). The radius of the runners must be maintained over the full length of the runner with the exception of the 2 cm (measured horizontally – Fig. 21) at the extremes of the runner.

n) The fastening brackets must have a minimum length of 60 mm (2-man/2-woman and 4-man bobs) measured at a height even with the upper edge of the runner.

o) The area surrounding the mounting hole must maintain a minimum thickness of 10 mm to the periphery of the fastening bracket. The transition area between the running surface and the full runner thickness must not be globally concaved.

p) The mounting holes are at a minimum distance of 33 mm and a maximum of 60 mm (2-man/2-woman bob) and a minimum of 38 mm and a maximum of 65 mm (4-man bob) from the bottom surface of the runner.

12.2.7.5. Connection between Runners and Runner Carriers

a) The runners must be attached to the runner carriers using minimally 14 mm thread (2-man/2-woman bob) and minimally 16 mm thread (4-man bob) bolts with hexagonal nuts.

b) No portion of the bolt may be smaller in diameter than 12.5 mm. (2-man/2-woman) and 14.5 mm. (4-man)

c) It must be a self-locking nut with minimum height of 11 mm (2-man/2-woman bob) and of 13mm (4-man bob).

d) The nuts must not be welded to the holding brackets of the runner carriers and they must not be cased, clad or streamlined.

12.2.7.6. Runners Miscellaneous

a) The runner is shown in Figure 21.
b) Any aerodynamic covering of the runners is prohibited.

12.2.8. Detachable, moveable and/or adjustable parts

12.2.8.1. Purpose of 12.2.8

The purpose of 12.2.8 is to promote that the detachable, movable and/or adjustable parts of a bobsleigh are suitable for their intended purpose and do not pose a risk for bystanders and/or those participating in IBSF events. Also, the purpose of art. 12.2.8. is to promote a fair competition.

12.2.8.2. Brakes

a) Only harrow type brakes are allowed.
b) The brake cut-out must be open. A rubber membrane around the brake handles may be used.
c) No attempt may be made to reduce the area of the cut-out with any material.
d) The brake is actuated with two separately activated handles. In a four-men bob, the handles must be located either side of the brakeman.
e) The geometry of the brake must be designed in such a way that when applied by a single handle, with a full team complement, none of the brake components are permanently deformed (Figure 20).
f) The length of the handle, measured from the centre of the pivot, must be minimum 220 mm (2-man bob) or 350 mm (4-man bob).
g) The length of the braking arm measured from the centre of the pivot to the top of the harrow must be minimum 150 mm (2-man/2-woman and 4-man bobs).
h) The height of the harrow must be minimum 35 mm (2-man/2-woman and 4-man bobs).
i) The height of the teeth of the harrow must be minimum 20 mm (2-man/2-woman and 4-man bobs).
j) There will be a minimum of 5 teeth over a total minimum length of 230 mm (2-man/2-woman bob) and a minimum of 6 teeth over a total minimum length of 280 mm (4-man bob).
k) The teeth must be able to reach and cut the ice for a minimum of 50 mm below the runner standing surface.
l) Rubber or rubber-like material may be used in the retraction mechanism of the brakes.

12.2.8.3. Push bars

a) Both the driver's side push bar and the side push bars must be retractable.
b) When retracted, the side push bars must be essentially flush with the surface of the cowling. The rotation axis has to have the same level in the extended and retracted positions.
c) The brakeman's handles must be immovable.
d) The brakeman's push handles (2-man/2-woman and 4-man bobs) as well as the side push bars (4-man bob) must have a minimum height of 670 mm and a maximum height of 870 mm, measured from the standing surface of the runner carriers.
e) The total width of the side push bars (4-man bob) for the second and third members must not exceed 750 mm.
f) When the four-men bob side push bars have a vertical rotating axis, the push bar stanchion must be at least two-thirds the width of the push bar, for at least two-thirds of the push bar length with a maximum gap of 3 mm.
g) The front of the push bar stanchion tapers down to the cowling at a point not more than 450 mm ahead of the axis of the push bar (Figure 7).
h) For the purpose of retracting the push bar(s), rubber or rubber-like materials may be used.
i) The push bars (2-man/2-woman and 4-man position 2 respectively 4) must be at least 10 mm wide. The push bars position 2/4 have to have a width of 10mm at the length of 50 mm on their highest point (Fig. 1a). A transition area of 20 mm is allowed, where the width changes from 10 mm to cowling thickness. For the transition area of 20 mm as well as the length of 50 mm, the regulation regarding the width dimension of 400 mm according to point 12.2.4.3.5 does not apply.

12.2.8.4. Foot Rests and Hand Holds

Athletes must have means to hold on to the sled in case of a crash. Any sled must therefore have a sufficient number of handholds.

12.2.8.5. Steering ropes and Steering handles

Steering ropes that connect the steering handles to the steering mechanism must be of sufficient strength to withstand the forces encountered in practice and competition. Steering handles must be constructed in such a way that they will withstand the stresses encountered during practice and competition. Steering handles may be kept in place by the use of rubber or rubber-like material.

12.2.8.6. Carrying Bars

Bobsleighs may be fitted with carrying bars in the front bumper to facilitate transportation. In that case, carrying bars must be fitted in such a way that they remain retracted from start to finish and that under no circumstances they

become detached during a heat. Rubber or rubber-like material may be used to keep the carrying bars in place.

12.2.8.7. Padding materials

Padding on the inside of the bobsleigh, used to protect athletes from injuries and that is in accordance with the rules of 12.2.3 and 12.2.4 may contain rubber or rubber-like material.

For each athlete padding of 2 x 200 x 200 mm or alternatively 4 x 150 x 150 mm plus an additional piece of "DIN A4" format for the driver's seat (contact to the bottom of the sled) are permitted. Furthermore padding may be used to cover parts of the frame to a maximum surface area of 10 dm2 and a maximum thickness of 50 mm. Furthermore, it is possible to attach a padding of 200 x 200 mm to all junctions between the frame and the cowling on the sled. These dimensions are not cumulative.

A hole or slit/recess in the padding must be allowed to measure the 650 mm from the bottom of the sled.

It is not permitted to attach any additional materials to the cowling cutout (Fig.4). Padding located 8 cm below the cowling cutout parallel to the top is permitted. All other dimensions must be respected.

The inside edges of the cowling can be covered with two strips of padding which must be placed in a symmetrical manner one on each side. This padding must be within an area 50mm back from the center of the cowling cut out and must not be further back then 500mm. The padding must be placed on the inside edge of the cowling according to Figure 2b. The dimensions of the padding can be a maximum 150mm length x 30mm width x 10mm thickness.

12.3. Miscellaneous

12.3.1. Purpose of 12.3

12.3.2. Principles and Properties

12.3.2.1. Applicability

12.3.2.2. Tolerances and Limits

12.3.2.2.1. Use of measuring equipment

a) Equipment used to establish whether bobsleigh equipment complies with the Rules must be used in a professional manner and according to the manufacturer's instructions.

b) The systematic and non-systematic errors of the testing equipment used for testing bobsleigh materials must be known to the Material Controller.

c) Systematic and non-systematic errors of the measuring equipment used must be considered when testing bobsleigh materials. Tolerances of testing equipment should be discounted to the advantage of the teams or athletes.
d) In case of in situ-testing measurements indicating a violation of the rules that could result in disqualification, the measuring process must be repeated under controlled conditions.

12.3.2.2.2. Quality of testing equipment

a) The testing equipment used for testing bobsleigh materials should be fit for that purpose.
b) All measuring instruments used in bobsleigh testing must be fitted with a label indicating the measuring tolerance.
c) Passameters with equivalent tolerances may be used.
d) Radiuses and convexity must be tested by using IBSF patterns.
e) (Surface) Hardness must be measured by using calibrated measuring equipment
f) The composition of bobsleigh materials must be established by using calibrated measuring equipment.
g) Calibration of testing equipment must be performed on a regular basis and according to manufacturer's recommendations. In case of calipers, micrometers and Passameters, calibration standards must be available during testing.
h) Equipment used to perform in-situ measurements must be calibrated for that purpose.

12.3.3. List of Drawings and Figures

a) Figure 1 is a side view and
b) Figure 2 is a top view of a bob resting on a horizontal surface.
c) Figures 3 A, B, C and D define the planes with which the 'concave shape' rules will be controlled.
d) Figure 4 clarifies the flange required at the front of the pilot's cut-out.
e) Figure 5 shows the controlled dimensions of the front bumper cross-section.
f) Figure 6 defines the shape of the front and rear bumpers from a top view and at the point of contact to the wall.
g) Figure 7 clarifies dimensions and tolerances of the side push bar stanchion.
h) Figures 8, 9 and 9a depict the essential constructive elements top view and (partly sectional) side view, respectively, with dimensions corresponding to a 2-man bob.
i) Figure 10 is a (partly sectional) front view of the frame and front axle region of a 2-man bob.
j) Figure 11 depicts the top and side views of the runner carriers of a 2-man bob.

k) Figure 12 depicts the front view and bottom view of the front axle of a 2-man bob.
l) Figure 13 depicts the rear axle of a 2-man bob.
m) Figures 14 and 15 depict the essential constructive elements top view and (partly sectional) side view, respectively, with dimensions corresponding to a 4-man bob.
n) Figure 16 is a (partly sectional) front view of the frame and front axle region of a 4-man bob.
o) Figure 17 depicts the top and side views of the runner carriers of a 4-man bob.
p) Figure 18 depicts the front and bottom view of the front axle of a 4-man bob.
q) Figure 19 depicts the rear axle of a 4-man bob.
r) Figure 20 depicts the construction of the brake (2-man/2-woman and 4-man bob).
s) Figure 21 shows the essential dimensions of the runners (2-man/2-woman and 4-man bob).
t) Figure 23 depicts the connection between the cowling ad the frame, the position relative to the division line of the forward travel stops limiting the movement of the cowling relative to the frame and the position relative to the rear axle of the rear travel stops limiting the movement of the cowling relative to the frame.

12.4. Drawings

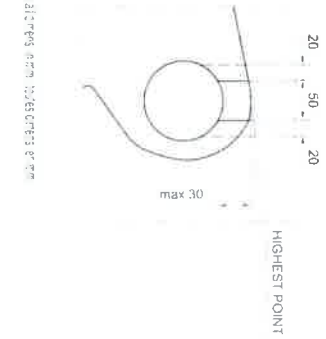


Fig.1a.

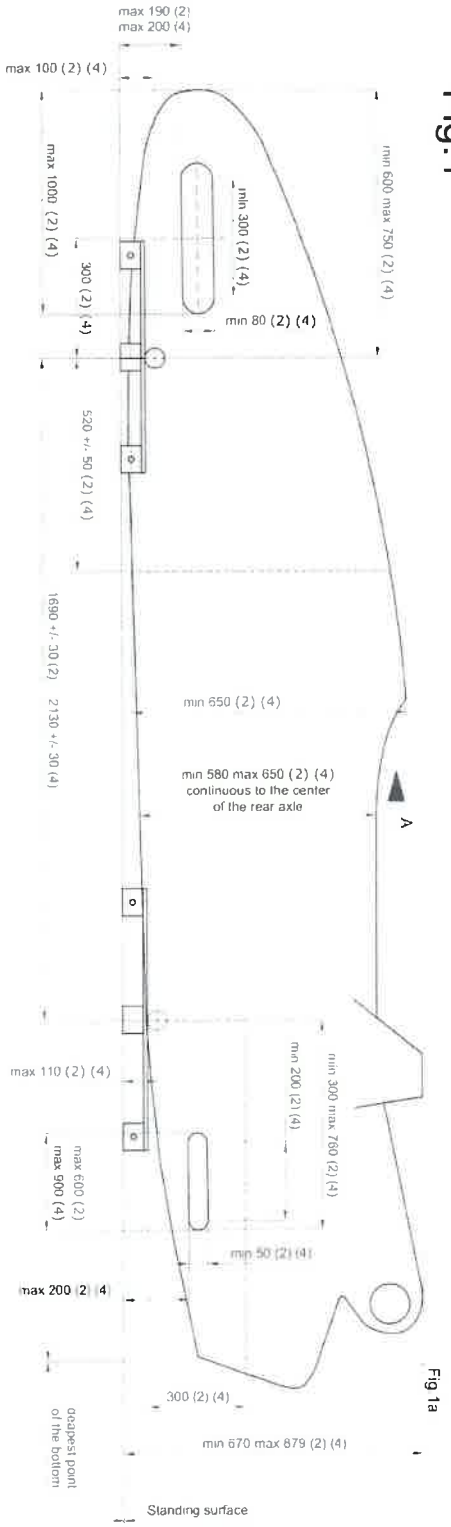


Fig.1

Fig 1a

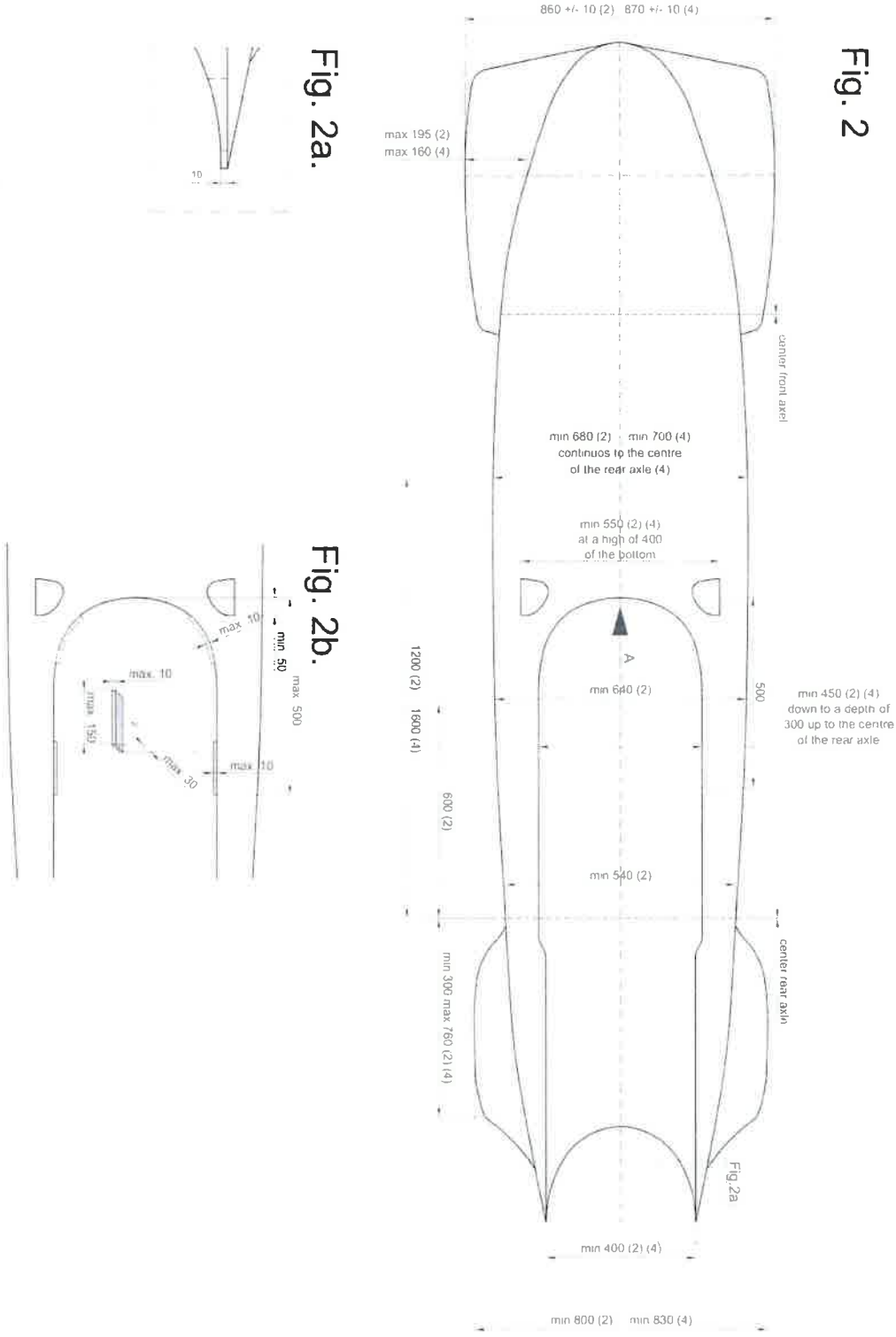
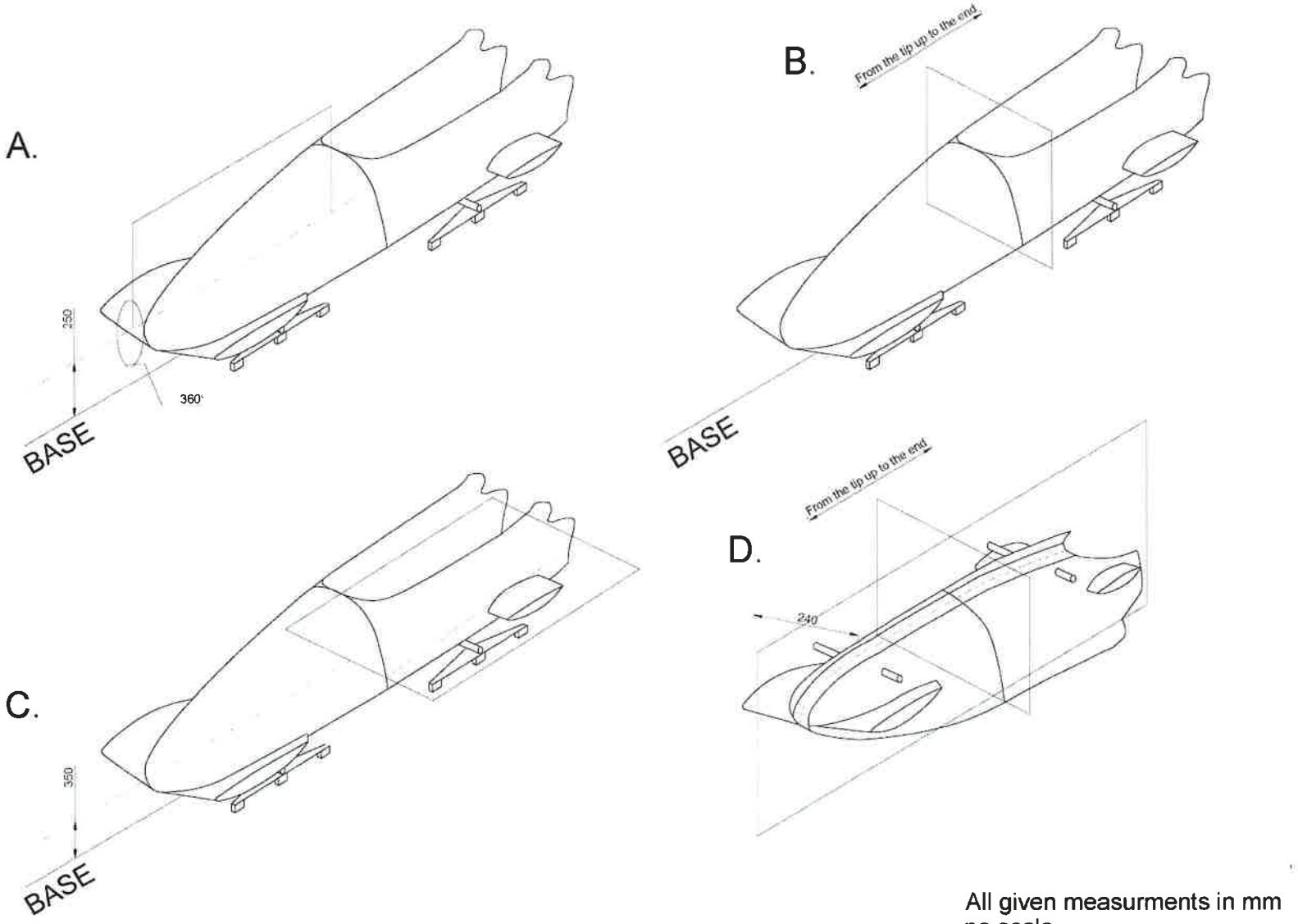


Fig. 2

Fig. 2a.

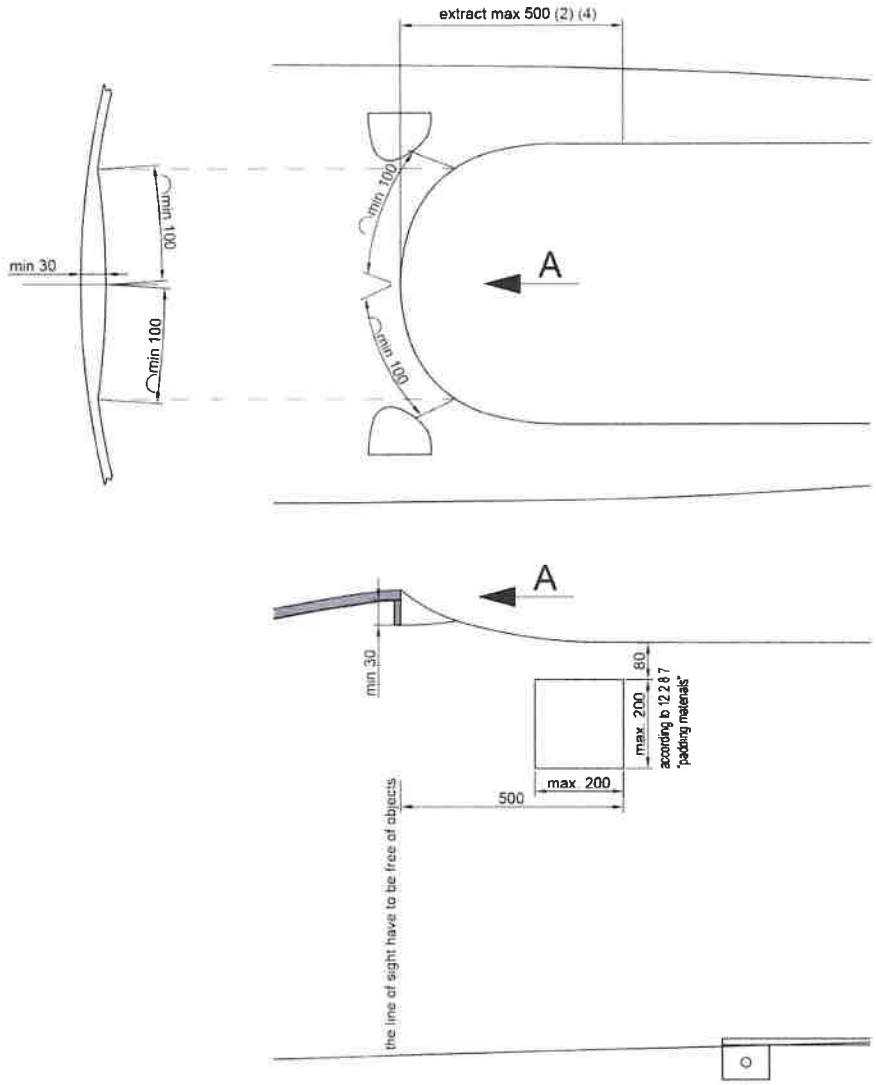
Fig. 2b.

Fig.3



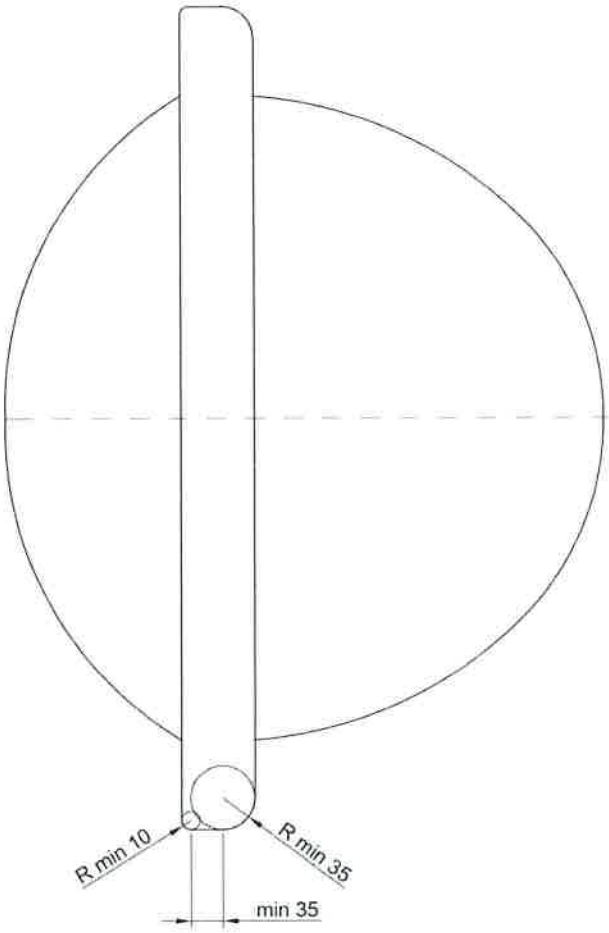
All given measurments in mm
no scale

Fig.4
View A of Fig. 1 and 2



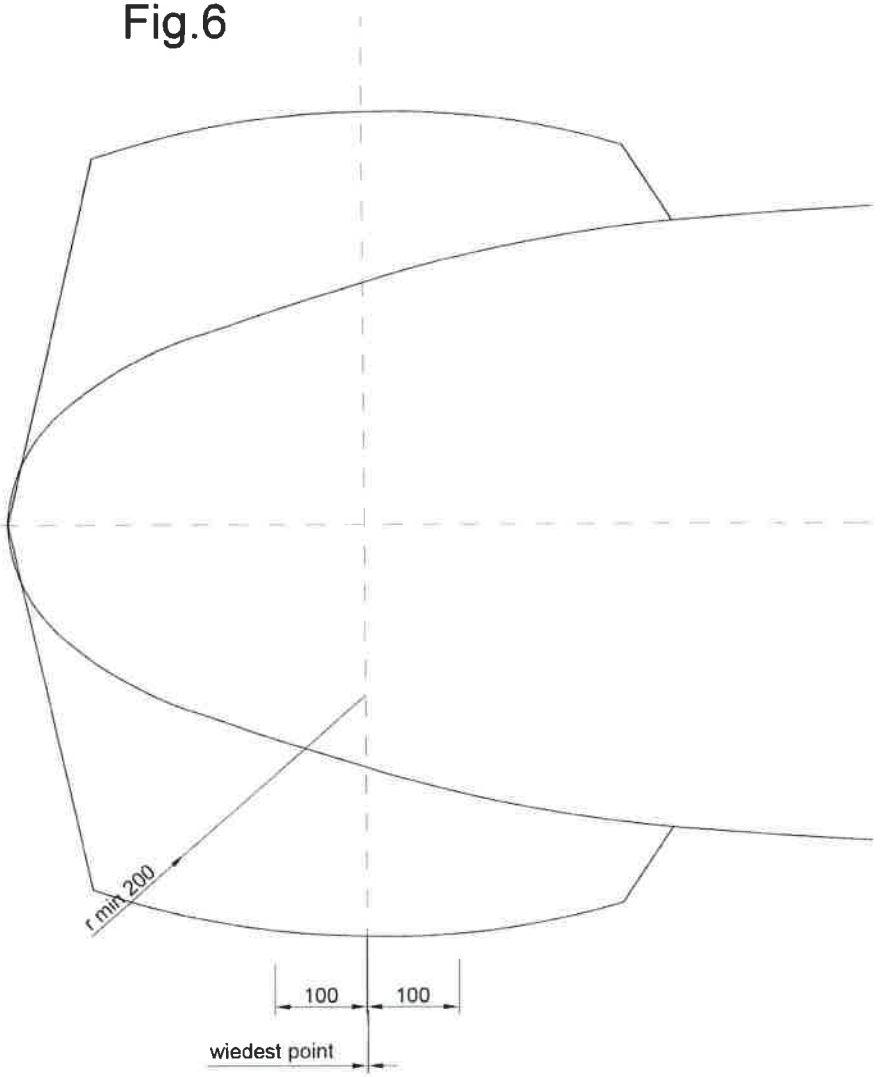
All given measurments in mm
no scale

Fig.5



Front bumpers

Fig.6



Front and back bumpers

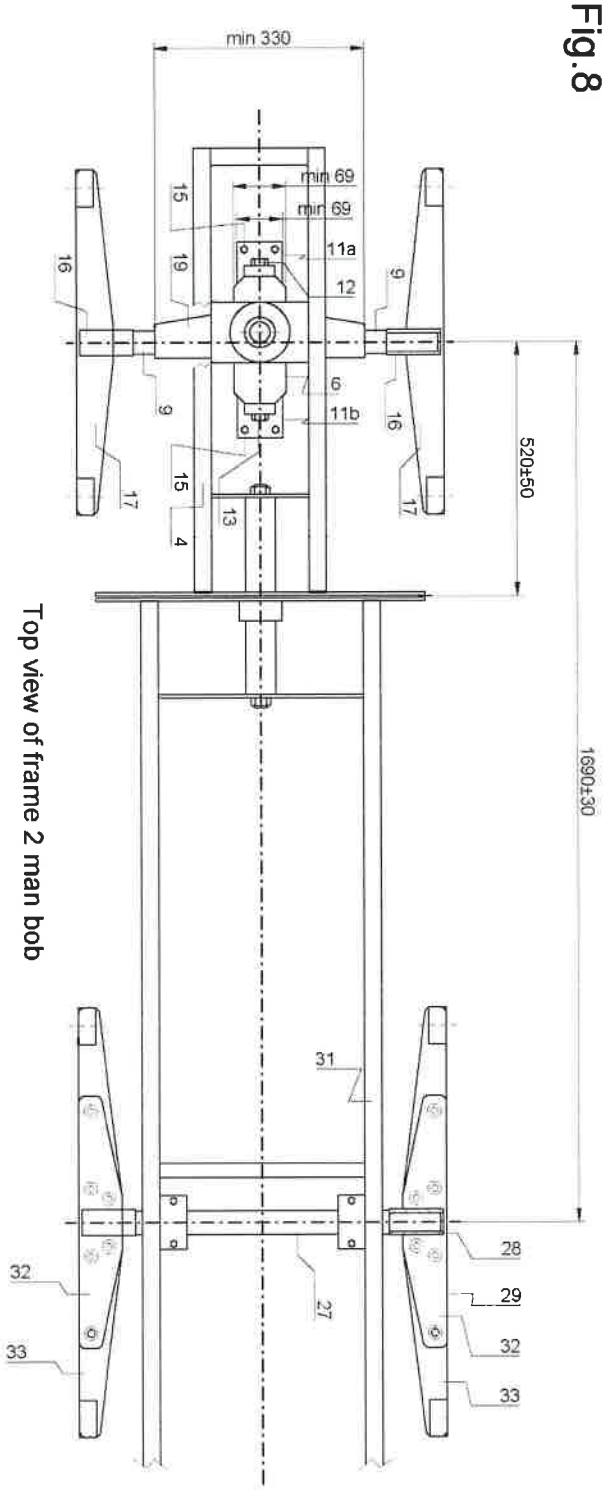
All given measurments in mm
no scale

Fig.7

Side push bar and stanchion

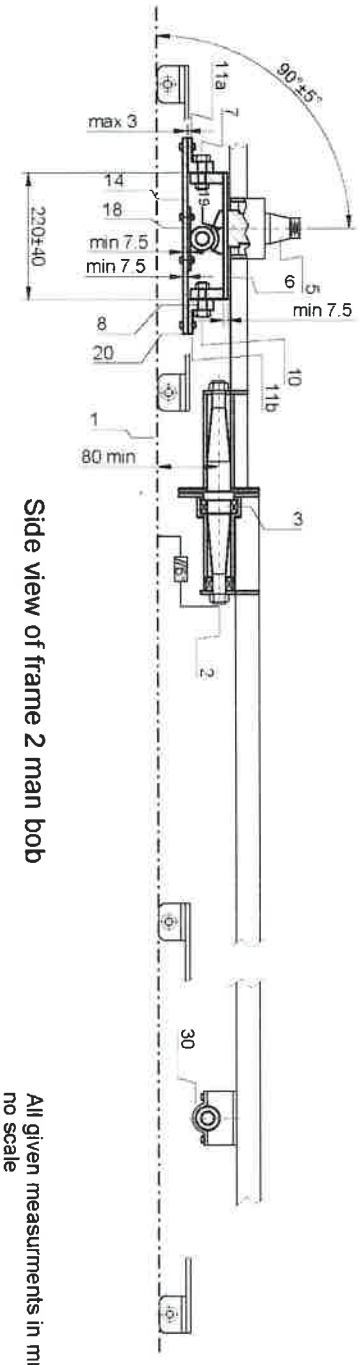
All given measurments in mm
no scale

Fig.8



Top view of frame 2 man bob

Fig.9



Side view of frame 2 man bob

All given measurments in mm
no scale

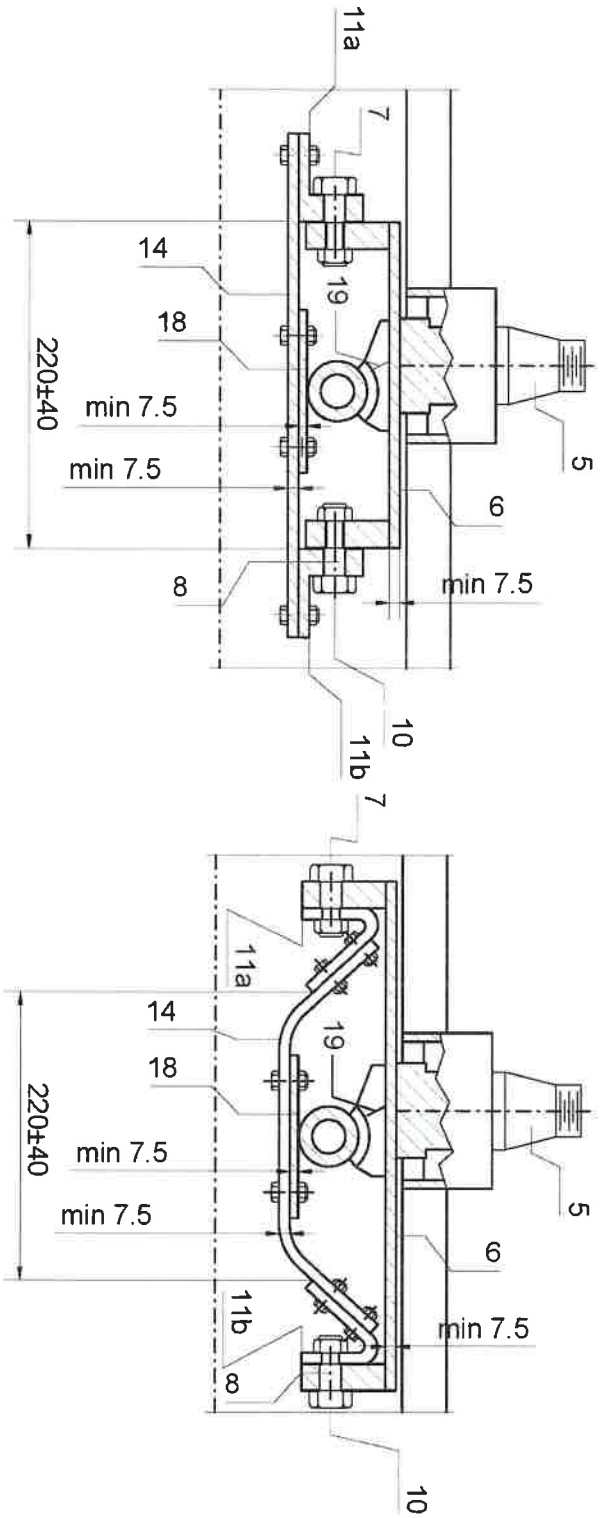


Fig.9a

Fig.9b

All given measurments in mm
no scale

Fig.10 Front view of frame 2 man bob

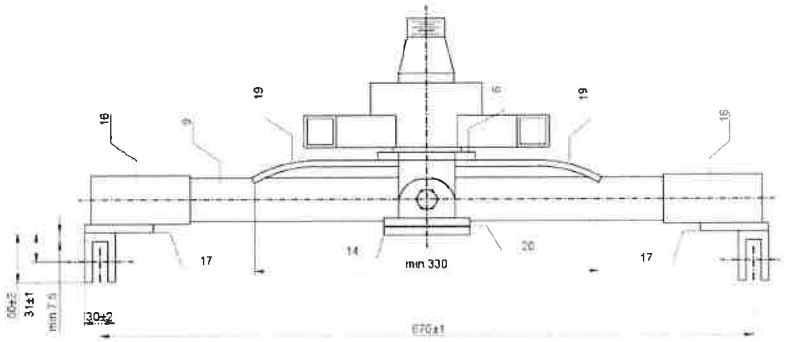
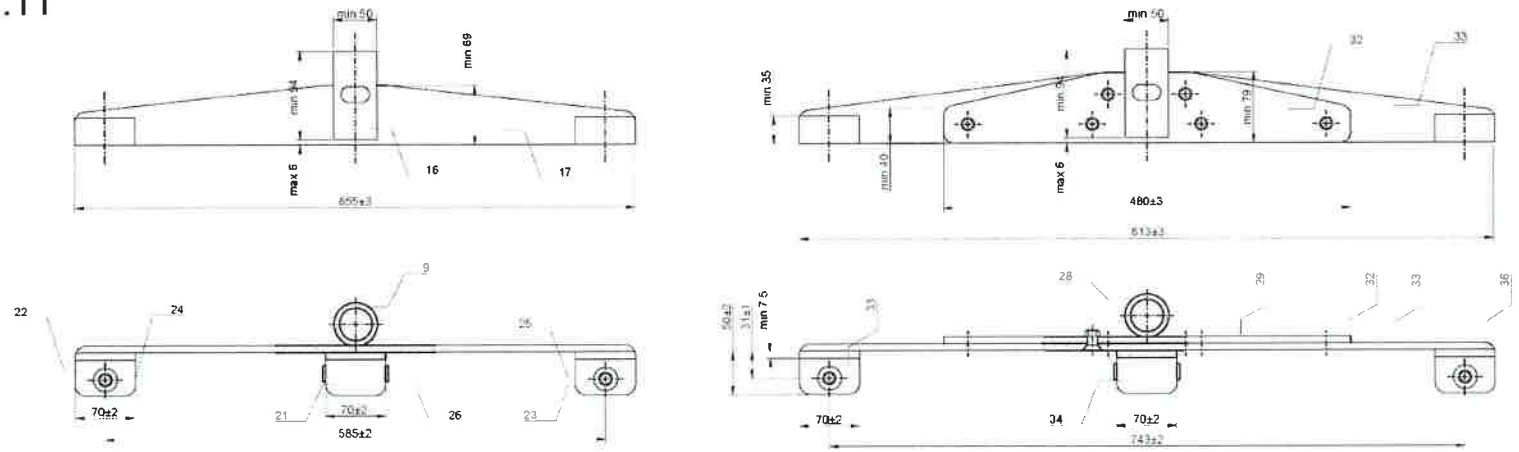


Fig.11 Runner carriers 2 man bob



All given measurments in mm
no scale

Fig.12

Front axel 2 man bob

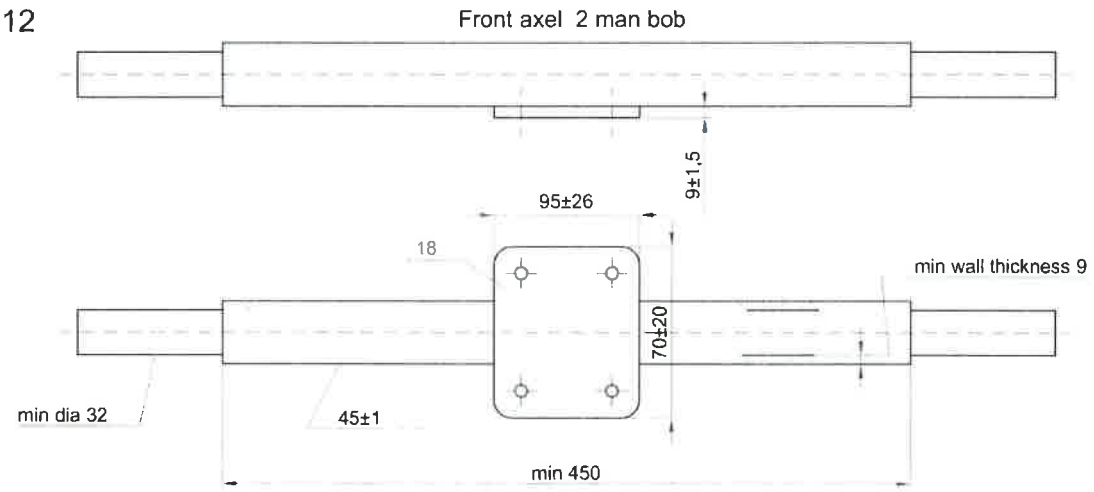
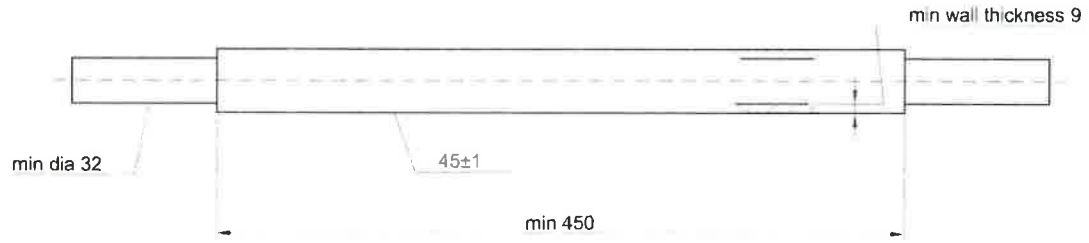


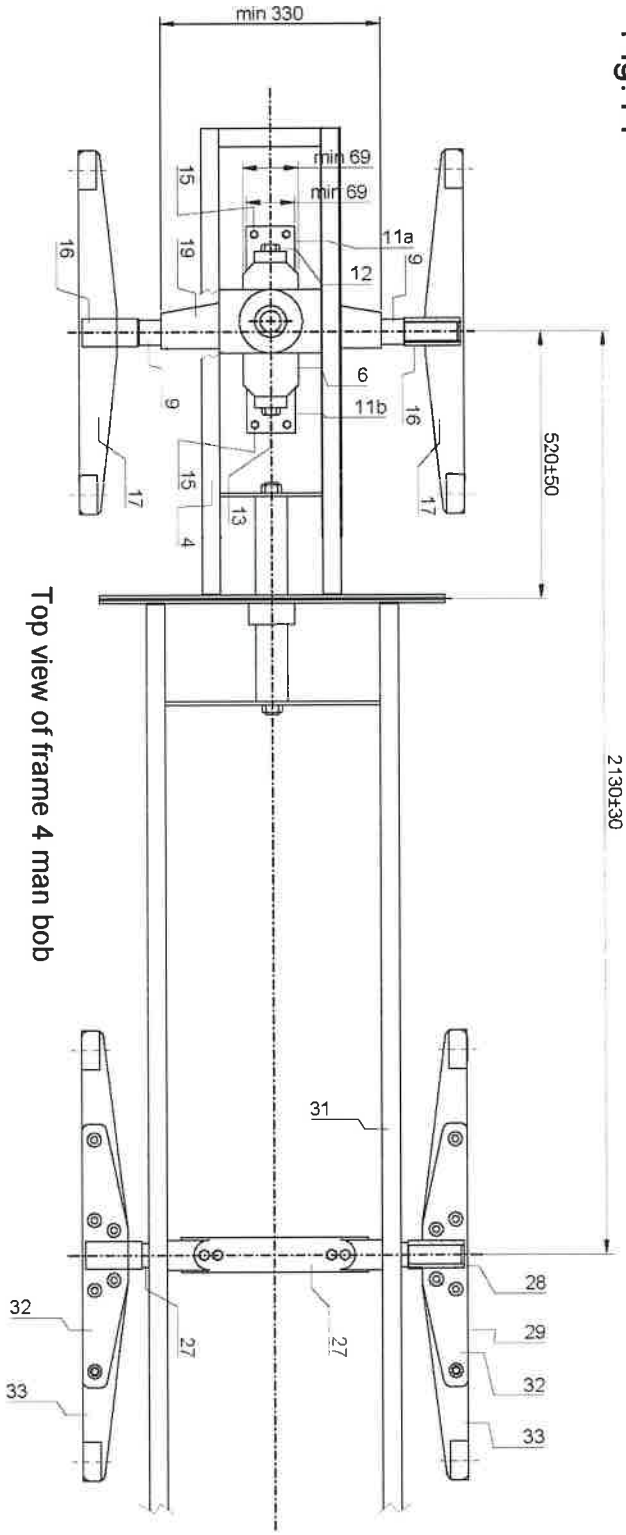
Fig.13

Rear axel 2 man bob



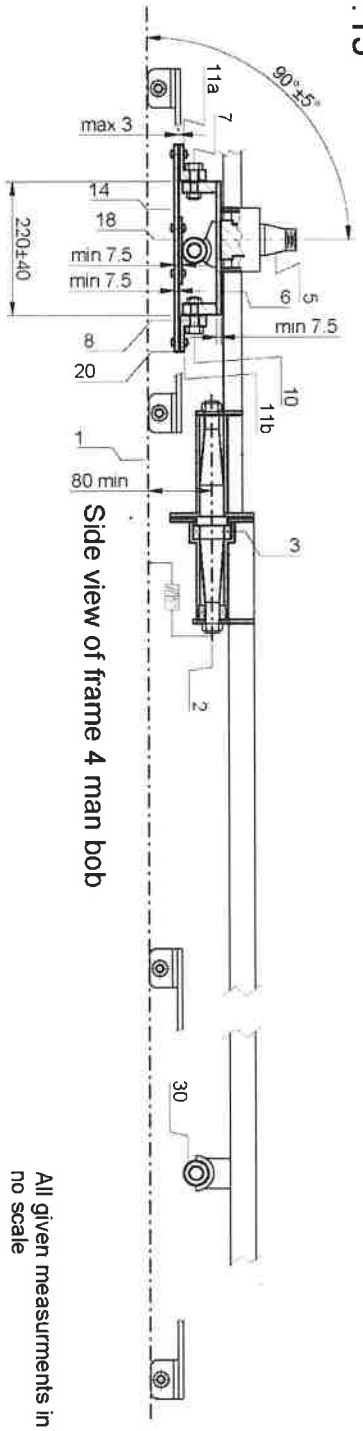
alle Maße in mm | all dimens. in mm | toutes dimens. en mm

Fig.14



Top view of frame 4 man bob

Fig.15



Side view of frame 4 man bob

All given measurments in mm
no scale

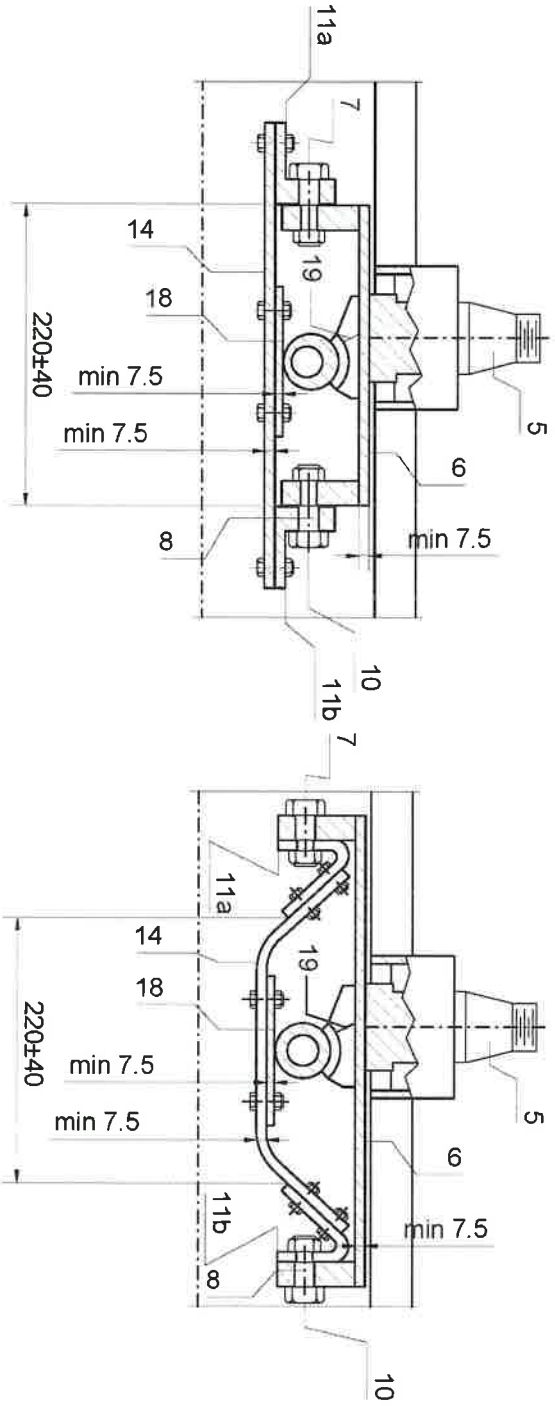


Fig.15a

Fig.15b

All given measurments in mm
no scale

Fig.16 Front view of frame 4 man bob

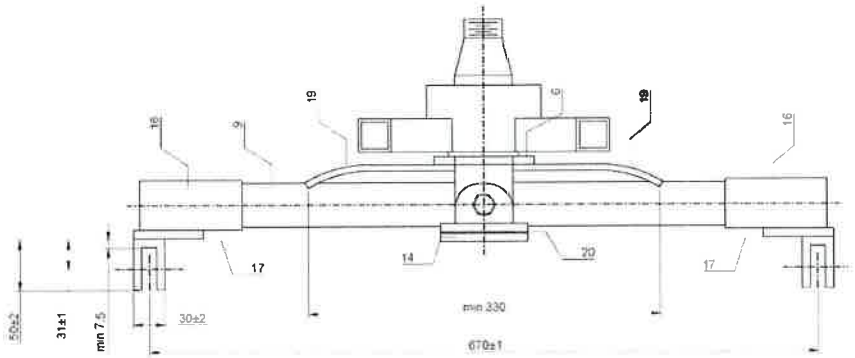
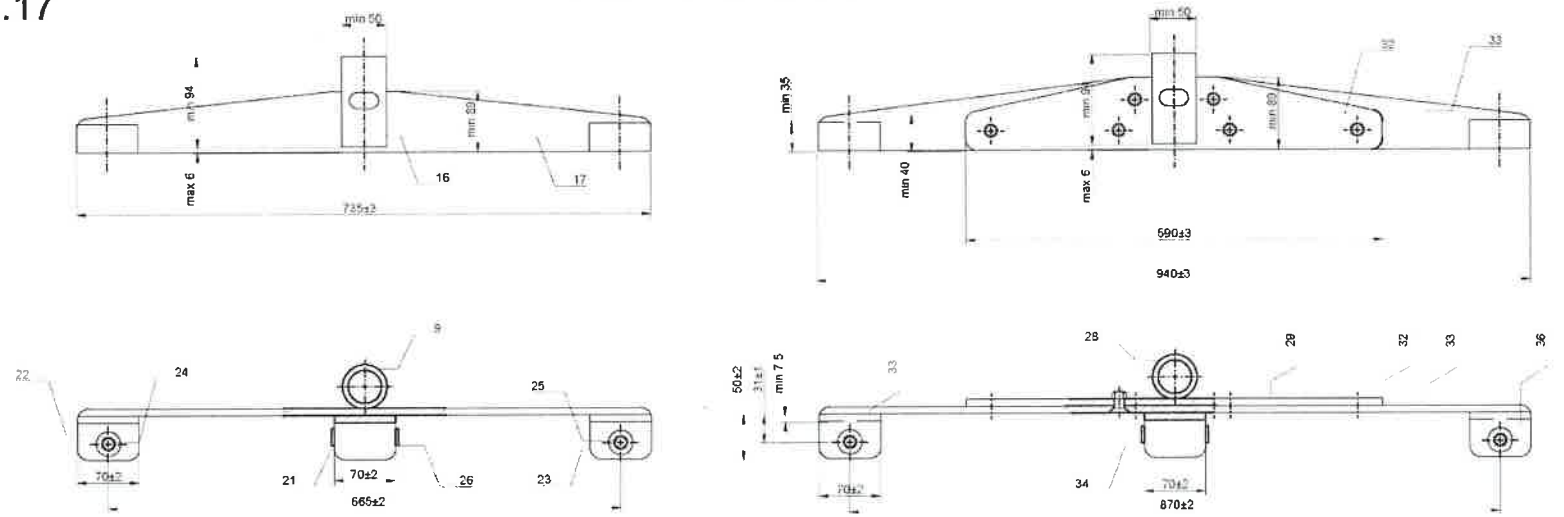


Fig.17 Runner carriers 4 man bob



All given measurments in mm
no scale

Fig.18 Front axel 4 man bob

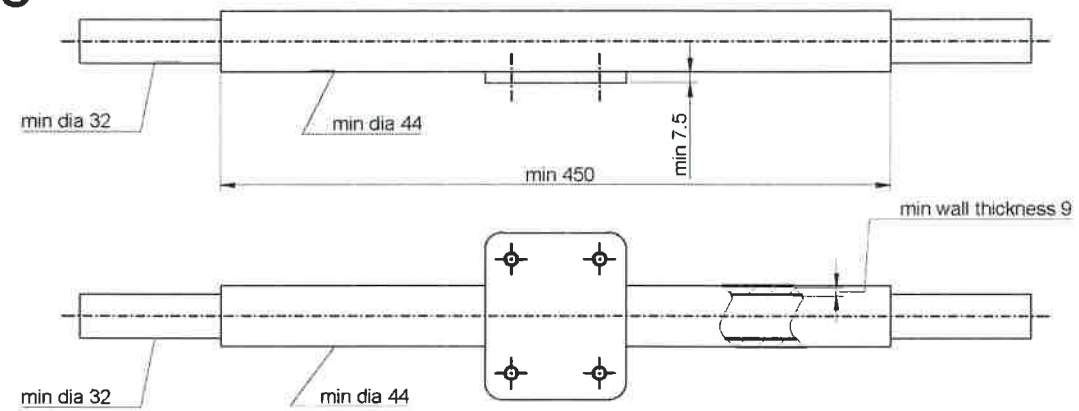
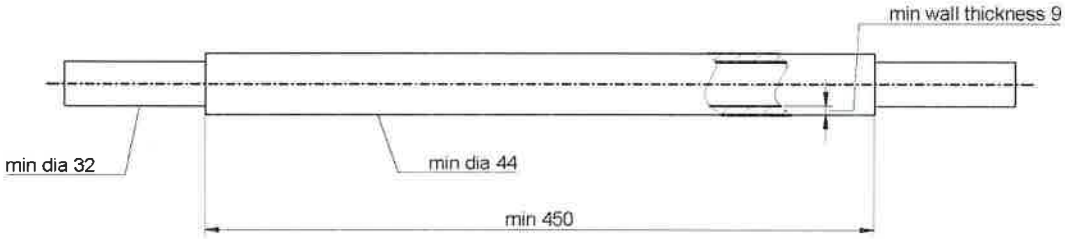
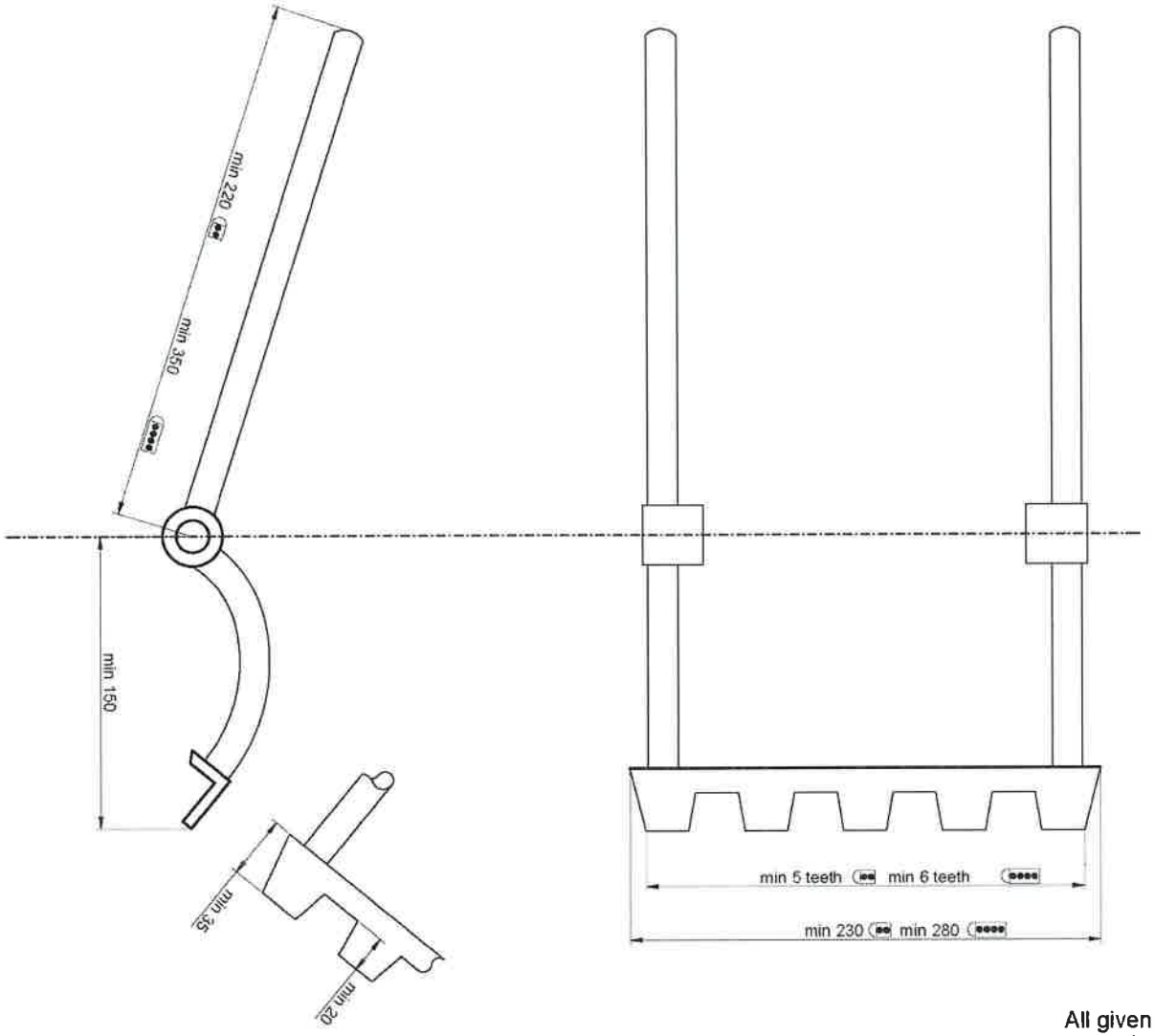


Fig.19 Rear axel 4 man bob



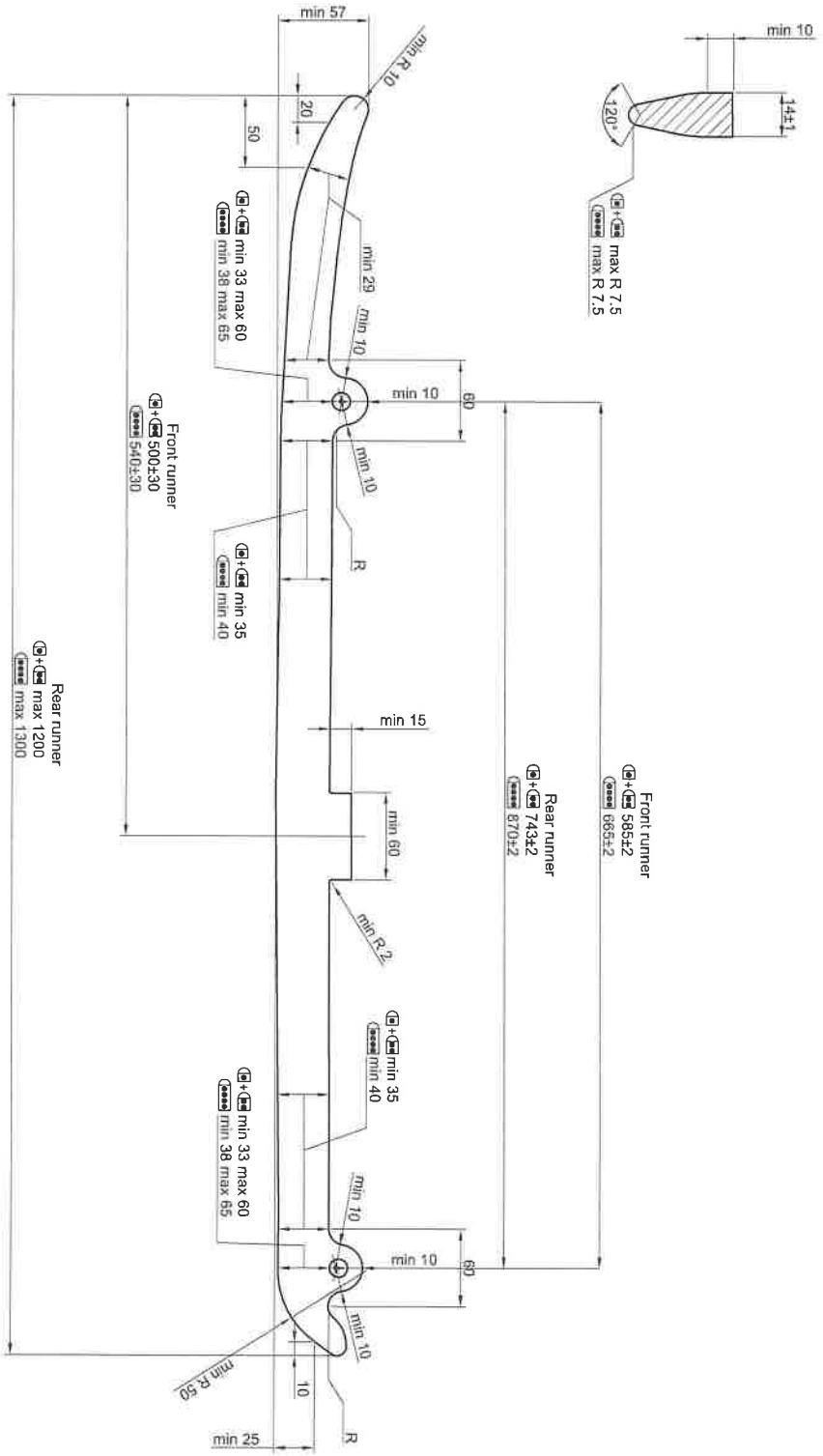
All given measurments in mm
no scale

Fig.20



All given measurments in mm
no scale

Fig.21



alle Maße in mm | all dimens. in mm | toutes dimens. en mm
no scale

Fig. 23

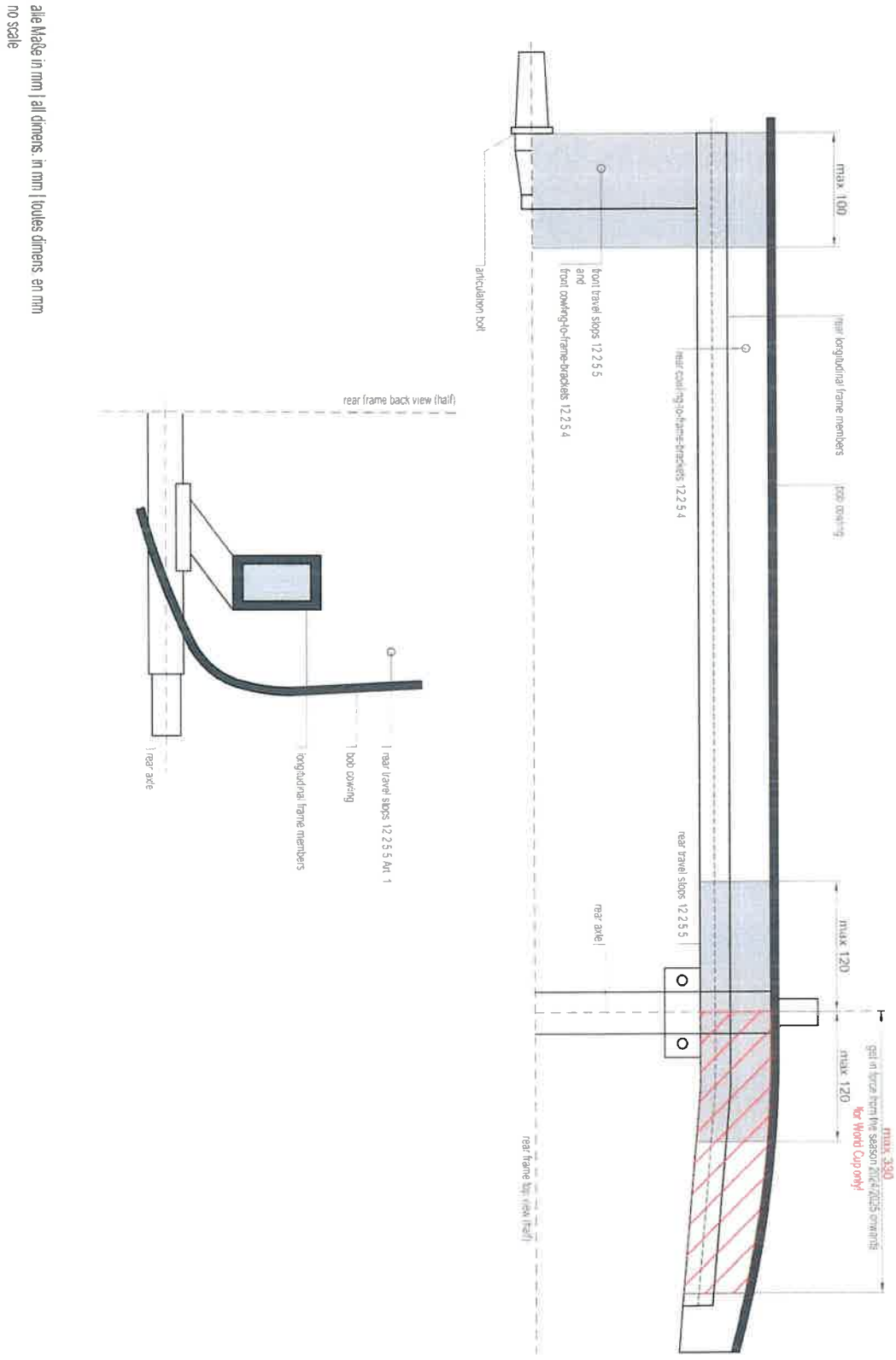

alle Maße in mm | all dimens. in mm | toutes dimens. en mm
no scale
articulation bolt
front travel stops 1 2 5 5
and
front cowling-to-frame-brackets 1 2 5 4
rear cowling-to-frame-brackets 1 2 5 4
rear longitudinal frame members
bob cowling
rear travel stops 1 2 5 5
rear axle
max. 100
max. 120
max. 120
max. 330
gap in force from the season 2024/2025 onwards
for World Cup only!
rear frame back view (half)
rear axle
longitudinal frame members
bob cowling
rear travel stops 1 2 5 5 Art. 1

Fig. 24

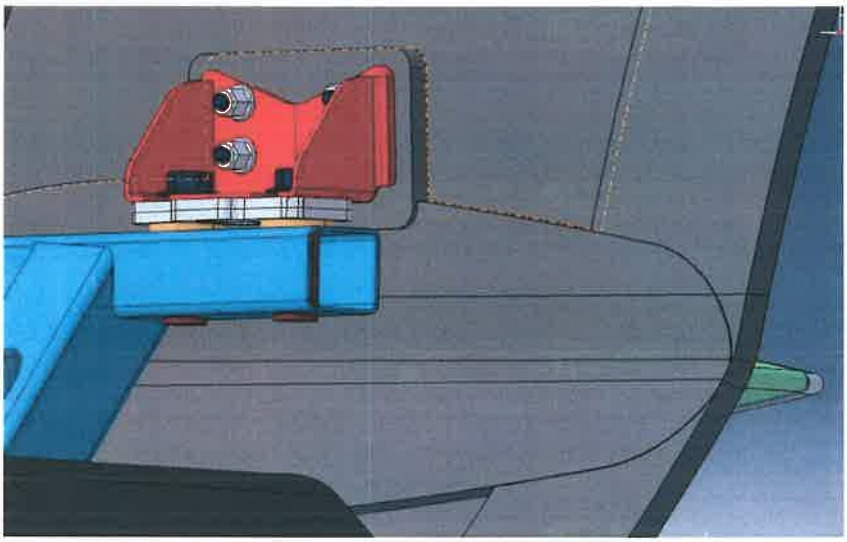
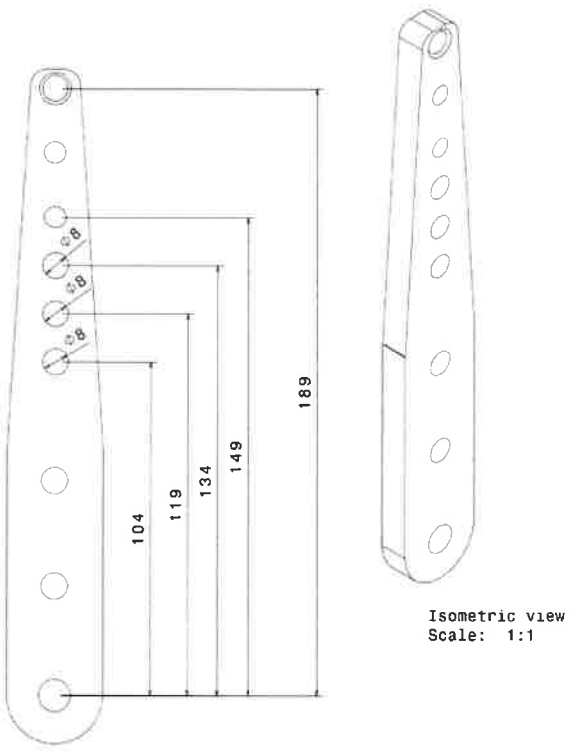


Fig. 25



Isometric view
Scale: 1:1

Bottom view
Scale: 1:1

All Dimensions in mm.
Not dimensioned geometry
according to IBSF Monobob
series production part.

Fig. 26