**RULES FOR COMPETITIONS**

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**BOOK 3. MATERIAL RULES**

*PART 1. FENCERS’ WEAPONS AND EQUIPMENT*

**CHAPTER 1. WEAPONS**

**CHARACTERISTICS COMMON TO ALL WEAPONS**

**m.1. 1.** There are three types of weapon: foil, épée and sabre.

**2.** All weapons are authorised providing only that they conform to these regulations and to the safety standards which are annexed.

**3.** The weapon should be so constructed that it cannot normally injure either the user or his opponent. All methods of treating a blade between­ the guard and the tip (button), by grinding, filing or other methods­, are forbidden.

**4.** Sharpening the edges or angles of the point is forbidden.

**General description**

**m.2.** All weapons are composed of the following parts.

**1.** A flexible steel **blade** completed at its forward extremity by a **button­** and at the rear by the **tang** (the latter included in the handle when the weapon is mounted).

**2.** A **handle** within which the tang of the blade is fixed by a **locking nut** or in any other way, and which enables the fencer to hold the weapon. It may be composed of one or several parts: in the latter case it is di­vided into a **grip** (which is normally held in the hand)   
and a pom­mel­ (rear portion of the handle which locks the handle onto the tang).

**3.** A metal **guard** fixed (with the convex face towards the front) between­ the blade and the handle, serving to protect the sword hand. The guard may contain a **padding** or cushion (cf. m.5/2) to reduce the effect of blows. It will also contain a **socket** to which the **bodywire** can be connected.

**Dimensions** (cf. m.7ss, m.15ss, m.21ss)

**m.3.** Each weapon has its particular design and measurements.

**1.** The **length** of the blade includes the button and everything which is added in front of the convex surface of the guard whether or not it is fixed to the latter.

**2.** The **total length** of the weapon and its various parts corresponds to the distances between lines (planes) drawn parallel to each other and perpendicular to the axis of the blade. These lines are situated:

**a)** A at the forward extremity of the weapon

**b)** B at the point where the blade leaves the front, convex, surface of the guard

**c)** C at the back of the aforesaid guard

**d)** D between the grip and the pommel

**e)** E at the rear extremity of the handle

**3.** The **total length** of the weapon is the distance between lines A and   
E; the **length of the blad**e that between A and B; the **length of the   
handle** that between B and E; and the **depth of the guard** that between B and C.

**4.** The **maximum total length** of the weapon must be less than the greatest permissible length for the blade and the handle added together. These two latter lengths must, therefore, complement each other to arrive at the total length of the weapon.

**5.** In order to **measure** either the total length of the weapon or the length of the blade, it is essential that the latter should be without any curve. When measurements are being made, the blade should therefore be held straight on a flat surface.

**6.** Only the **pommel or the locking nut** may be placed between lines   
D and E.

**The handle**

**m.4. 1.** **The maximum length** of the handle at foil and épée is 20 cm, measured­ between lines B and E, and 18 cm, measured between lines B and D. At sabre the maximum length of the handle is 17 cm (see Figures 8, 9 and 13, pp.11, 14, 21).

**2.** The handle must be able to pass through the same **gauge** as the guard. It must be so made that normally it cannot injure either the user or his opponent.

**3.** All types of handle are allowed providing that they conform to the regulations which have been framed with a view to placing the various types of weapons on the same footing. However, at **épée**, ortho­paedic­ handles, whether metal or not, may not be covered with leather or any material which could hide wires or switches.

**4.** The handle must not include any device which assists the fencer to use it as a **throwing weapon**.

**5.** The handle must not include any device which can increase in any way the **protection** afforded to the hand or wrist of the fencer by the guard: a cross bar or electric socket which extends beyond the edge of the guard is expressly forbidden.

**6.** If the handle (or glove) includes any **device** or **attachment** or has a **special shape** (orthopaedic) which fixes the position of the hand on the handle, the handle must conform to the following conditions.

**a)** It must determine and fix one position only for the hand on the handle.

**b)** When the hand occupies this one position on the handle, the extremity of the thumb when completely extended must not be more than 2 cm from the inner surface of the guard.

**The guard** (cf. m.9, m.17, m.24)

**m.5** **1.** The **convex face** of the guard must have a shape and surface which is both smooth and not too shiny. It must be so made that it can neither hold nor catch the opponent’s point. It must not have a raised rim.

**2. a) Inside the guard** there must be a cushion (padding) sufficiently wide to protect the electric wires from the fencer’s fingers. The padding on the inside of the guard must be less than 2 cm thick and must be arranged in such a way as not to increase the protection which the guard affords the hand.

**b) The connections** must be so arranged that it is impossible for the fencer to break or make contacts while fencing.

**c)** On **foils**, the wire must be protected by an insulating sheath.

**d)** On **épées**, the two wires must be protected by two insulating sheaths, one on each wire.

**e)** Both the **wire** and the **insulating sheath** must go right up to the socket.

**f)** In no case may **uninsulated wires** project beyond the point where they are attached to the socket (cf. m.29, m.31).

**3.** Any system of attachment inside the guard is allowed, provided that it conforms to the following requirements.

**a)** It must be **easy to detach** or **attach** the bodywire.

**b)** It must be possible to **check it** by a simple method such as using a penknife or a coin.

**c)** It must be **easy to apply** the pointe d’arrêt of the opponent’s weapon to the earth circuit connected to the blade.

**d)** It must have a **security device** which prevents the bodywire from becoming unplugged during the bout.

**e)** It must ensure the **complete connection** of the electric wires; it must be impossible for even a momentary break of contact to occur while the plugs are connected.

**f)** It must not include any part which allows electrical contact to be made between the plug sockets.

**4.** **a)** The maximum **electrical resistance** allowed for foil and épée is 2 ohms.

**b)** Those who wish to assemble electric weapons, but who are not equipped to undertake electrical tests, are advised that the limits for the electrical resistance for the circuits laid down for each weapon have been fixed so that they can be attained by anyone who is reasonably careful.

**c)** They are advised:

**i)** thoroughly to **de-oxidise** the external surface of the guard and the connecting surfaces inside it;

**ii)** **not to destroy** the insulation of the wires, especially where they pass along the groove in the blade at the point and at the guard;

**iii)** to avoid **accumulations of glue** in the groove of the blade.

**Equipment and Checking of Weapons**

**5.** **a)** At foil and épée, only traditional or homologated pointes d'arrêt are accepted. No other kind of pointe d'arrêt, notably new ones that are not homologated, will be accepted at the weapon control.

In order to make the identification easier, please note that a traditional pointe d'arrêt has two screws to fix the tip of the pointe d'arrêt to the base, the whole is in metal and there is no plastic in the base.

To make the checking of weapons easier and allow the complete observation of the tip and its base, foil fencers are requested to present their foils with bare points not covered with adhesive tape over the first 15cm.

**b)** In order that the registering of hits by the contact of the point on the opponent be correctly registered by the scoring device, the pointes d'arrêt must be clean. The electrical resistance measured in ohms must not exceed the limit of two ohms (m.5.4.a).

**c)** The blades, the guards at épée and foil and the guard at sabre must be totally of metal. Apart from at sabre where the part of the guard next to the pommel is insulated (insulating sheath), their exteriors must not be covered by any material (plastic or other).

The guard may not feature any advertising. This is also the case for the insulated part of the sabre guard.

**d)** Any fencer or other person who tries to register hits in a way that does not comply with the rules, either with the weapon or by manipulating the scoring device, will be excluded from the competition or from the competition zone and, after identification, will be liable to further penalty.

FOIL

**Weight**

**m.6.** The **total weight** of the foil ready for use must be less than 500 g.

**Length**

**m.7.** The **maximum total length** of the foil is 110 cm.

**The blade**

**m.8.** **1.** The blade, which is **rectangular in section**, must be made of steel complying with the safety standards described in Annexe A to the Rules.

**2.** The **edges** must be smoothed off so that they will not cut, and must be chamfered at an angle of 45° (± 5°), 0.5 mm on each side (± 0.1 mm), so that they will neither cut nor become capable of cutting.

**3.** The blade **is mounted** with the widest face placed horizontally.

**4.** The **maximum length** of the blade is 90 cm (cf. m.3).

**5.** The blade should have a **flexibility** equivalent to a bend of minimum 5.5 cm and maximum 9.5 cm measured in the following way.

**a)** The blade is fixed horizontally at a point 70 cm from the extremity of the button.

**b)** A 200 g weight is suspended 3 cm from the extremity of the button.

**c)** The bend of the blade is measured at the extremity of the button be­tween the non-weighted and weighted positions (see Figure 8, opposite).

**d)** The groove in the blade must be uppermost.

**6.** The blade should be as straight as possible. **Any curve** of the blade must be uniform and the maximum bend must in any case be less than one cm; it is only permitted in the vertical plane and must be near the centre of the blade.

**The guard** **(cf. m.5)**

**m.9.** **1.** The **guard** must be able to pass through a straight cylindrical gauge having a diameter of 12 cm and a length of 15 cm, the blade being parallel with the axis of the cylinder.

**2. Eccentric mounting** is forbidden, that is to say that the blade must pass through the centre of the guard. The diameter of the guard must be between 9.5 cm and 12 cm.

**Electric wire**

**m.10.** The foil has a single **wire**, glued in a groove cut the whole length of the blade, which permanently connects the pointe d’arrêt to the corresponding socket inside the guard.

**Pointe d’arrêt**

**m.11.** **1.** The diameter of the **pointe d’arrêt** is between 5.5 mm and 7 mm; the diameter of the body of the button including its exterior insulation must not be more than 0.3 mm less than that of the pointe d’arrêt.

**2.** The pointe d’arrêt must be **cylindrical; its front surface** is flat and perpendicular to its axis.

Its edge will either be rounded with a radius of 0.5 mm or have a chamfer of 0.5 mm at 45°.

**3.** The **pressure** required on the pointe d’arrêt, in order to break the contact and cause the apparatus to register a hit, must be more than 500 g, that is to say that this weight must be lifted by the spring of the point. The weight of 500 g supplied by the Organising Committee may have a tolerance of ± 2 g, i.e. 498–502 g.

**4.** The **course** or stroke of the pointe d’arrêt required to cause the electrical apparatus to register a hit, called the *lighting stroke*, may be infinitesimal: the total stroke of the pointe d’arrêt must not be greater than 1 mm.

**5.** The pointe d’arrêt must be **retained in the button** in at least two places equidistant from each other, or by any other method which has been approved by the SEMI Committee of the FIE.

**6.** When not depressed the pointe d’arrêt is in contact with the **main body of the foil**. When a hit is made, this contact must be broken.

**Method of affixing the button**

**m.12.** **1.** If the **base** of the button is not made in one piece with the blade, or if it does not permit the flattened piece at the tip of the blade to be retained, it must be screwed onto the end of the blade, which must be cut and threaded for this purpose under the following conditions.

**2.** Normally, only **fixing** by metal to metal is allowed. However, fixing by any insulating material of great mechanical strength may be authorised after approval by the SEMI Committee of the FIE.

**3.** All methods of **soldering or brazing** or in general any heating which may affect the temper of the blade are forbidden. Only solder of very easily melted tin, used with a soldering iron, to prevent the tip from coming loose, is authorised.

**4.** The end of the blade before cutting the thread must not have a **diameter** at any point of **less** than 3.5 mm, and this without anything being wrapped round it, a process which is strictly forbidden.

**5.** The diameter of the **core of the thread** must not be less than 2.7 mm (thread SI 3.5  0.60). The threading must be very tight.

**6.** The **part of the blade** on which the button is fixed should be of a length of 7–8 mm entirely covered by the button. It is recommended that only the half of this length at the extremity of the blade be threaded. For the other half the button will have a smooth surface of 3.5 mm diameter into which it should take some force for the corresponding part of the blade to be introduced.

**7.** When a button made of **light alloy** is used, instructions should be sought from the SEMI Committee of the FIE.

**8.** At the point at which the wire passes into the button, the **width of the groove** must not exceed 0.5 mm, and its depth must not exceed 0.6 mm measured on the diameter of the core of the thread, in order to weaken as little as possible the section of the blade.

**9.** Only the members of the **SEMI Committee** of the FIE or the **Directoire Technique** can require the verification of the above points.

**The insulation of the button, the blade and the handle**

**m.13.** **1.** The body of the button and the foil blade for a length of 15 cm from the button, as well as the pommel or the rear extremity of the handle, must be entirely covered with **insulating material** (insulating tape, gummed paper, Sellotape, plastic material or varnish).

**2.** The **flange** of the sleeve which slides in the base of the point and within which is fixed the pointe d’arrêt must be of a smaller diameter than the insulated head of the pointe d’arrêt itself, to obviate an accidental contact being made with the conductive jacket when a hit is made.

**EPEE**

**Weight**

**m.14.** The **total weight** of the épée ready for use is less than 770 g.

**Length**

**m.15.** The **total maximum length** of the épée is 110 cm.

**The blade**

**m.16.** **1.** The blade, which is **triangular in section** without cutting edges, is made of steel and must comply with the safety standards described in Annexe A to the Rules.

There are two methods of manufacture (see Figure 9, opposite):

— By forging a steel cylinder (Cross-section of blade, A);

— By folding a sheet of steel (Cross-section of blade, B).

**2.** It should be as straight as possible and mounted with the groove uppermost­. **Any curve of the blad**e must be uniform and the maximum bend must in any case be less than 1 cm; it is only permitted in the vertical plane and must be near the centre of the blade.

**3.** The **maximum length** of the blade is 90 cm.

**4.** The **maximum width** of any of the three sides of the blade is 24 mm.

**5.** The blade should have a **flexibility** equivalent to a bend of 4.5 cm minimum and 7 cm maximum measured in the following way.

**a)** The blade is fixed horizontally at a point 70 cm from the extremity of the button.

**b)** A 200 g weight is suspended 3 cm from the extremity of the button.

**c)** The bend of the blade is measured at the extremity of the button between the non-weighted and weighted positions (see Figure 9, opposite).

**The guard** (cf. m.5)

**m.17** **1.** The **guard**, which must have a circular edge, must be able to pass through a cylindrical gauge having a diameter of 13.5 cm and a length of 15 cm, the blade being parallel to the axis of the cylinder. The depth of the guard (the distance between lines B and C) must be between 3 cm and 5.5 cm (cf. m.3).

**2.** The **total length** between lines A and C must never be greater than 95.5 cm (cf. m.3).

**3. Eccentric mounting** is allowed provided the distance between the centre of the guard and the point where the blade passes through the guard does not exceed 3.5 cm.

**Electric wires**

**m.18.** The épée has **two electric wires**, glued in a groove in the blade, which connect the button to two of the three sockets situated inside the guard and which form the active circuit of the épée. The body of the épée is connected to the third socket.

**Pointe d’arrêt and button**

**m.19.** **1.** The electric button is completed by a **pointe d’arrêt** which must conform to the following specifications.

**a)** The pointe d’arrêt is **cylindrical. Its front surface** is flat and perpendicular to its axis. Its edge will either be rounded with a radius of 0.5 mm or have a chamfer of 0.5 mm at 45° (see Figure 10, p.15).

**b)** The **diameter** of the crown of the pointe d’arrêt is 8 mm with a tolerance of ± 0.05 mm. The diameter of the base must not be less than 7.7 mm.

**c)** The **flange** (collar) which guides the pointe d’arrêt as well as the insulating washer must be sufficiently recessed in relation to the crown (it is recommended that it be recessed in diameter by 0.3–0.5 mm) so that it shall not be possible to cause a hit to be registered merely by sliding the depressed pointe d’arrêt against the convex surface of the guard (see Figure 11, opposite) (cf. t.67.a).

**2.**  The **pressure** required on the pointe d’arrêt in order to complete the circuit in the épée, and thus cause the apparatus to register a hit, must be more than 750 g, that is to say that this weight must be lifted by the spring of the point.

**3.** The **weight** used to check competitors’ épées on the piste consists of a metal cylinder drilled part of the way along its axis with a hole parallel to its sides; this hole, into which is inserted the end of the blade, must have an insulating lining to prevent its metallic parts coming into contact with the earthed mass of the épée which might then give a false result to the test.

This weight of 750 g, which is supplied by the Organising Committee, may have a tolerance of ± 3 g, i.e. 747–753 g.

**4. a)** The **course** or stroke of the pointe d’arrêt required to complete the circuit in the épée and thus cause the apparatus to register a hit, called the *lighting stroke*, must be greater than 1 mm. The further course which the pointe d’arrêt may travel must be less than 0.5 mm. (This requirement is just as essential as that for the lighting stroke.)

**b)** To enable a check to be made on the piste, the **total course** or stroke of the point must be greater than 1.5 mm (cf. t.43).

**c)** Adjusting the lighting stroke by means of **screws or any other external fixing device**, once the point has been assembled on the weapon, **is forbidden**.

**d)** An external screw or similar fixing device is only allowed if it is actually part of the assembling of the point.

**e)** The **head of the screw** or fixing device must never project beyond the flat top surface of the point and its housing in the flat surface may not exceed 2 mm in diameter.

**5.** The pointe d’arrêt must be **retained in the button** at at least two points equally spaced, or by any other system approved by the SEMI Committee of the FIE.

**6.** When there is a **hit**, the electrical contact must be established.

**Method of affixing the button**

**m.20.** If **the base of the button** is not made in one piece with the blade, or if it does not permit the flattened inset piece at the tip of the blade to be retained, the button must be screwed onto the end of the blade, which must be cut and threaded for this purpose under the following conditions­.

**1.** Normally, only **fixing by metal to metal** is allowed. However, fixing by any insulating material of great mechanical strength may be authorised after approval by the SEMI Committee of the FIE.

**2.** Only **solder** of very easily melted tin, used with a soldering iron, to prevent the tip from coming loose, is authorised.

**3.** The end of the blade, **before cutting the thread**, must not have a diameter at any point which is less than 4 mm and this without anything being wrapped round it, a process which is strictly forbidden.

**4. a)** The **diameter of the core** of thread at the end of the blade must not be less than 3.05 mm (thread SI 4.0  0.70).

**b)** The **part of the blade** on which the button is fixed should be of a length of 7–8 mm entirely covered by the button. It is recommended that only the half of this length, at the extremity of the blade, be threaded. For the other half the button will have a smooth surface of 4.0 mm diameter into which it should take some force for the cor­res­ponding part of the blade to be introduced.

**5.** The **groove** necessary to enable the wires to enter the button must be cut in such a way that it weakens as little as possible the section of the blade.

**6.** Only the members of the **SEMI Committee** of the FIE or the **Directoire Technique** can require the verification of the above points.

**SABRE**

**Length**

**m.21.** The **total maximum length** of the sabre is 105 cm.

**Weight**

**m.22.** The **total weight** of the sabre ready for use is less than 500 g.

**The blade** (see Figure 13, p.21)

**m.23.** **1.** The blade, which must be of steel, is **approximately rectangular** in section. The **maximum length** of the blade is 88 cm. The minimum width of the blade, which must be at the button, is 4 mm; its thickness, also immediately below the button, must be at least 1.2 mm.

**2.** The end of the blade must be folded over onto itself or be fashioned in one piece to form a **button** which, viewed end on, must have a square or rectangular section of 4 mm minimum and 6 mm maximum. The maximum dimension must be not more than 3 mm from the end of the blade.

**3.** The **end of the blade** may also be formed by a solid button which must have the same section as the button which is folded over (Figure 12, p.20).

**4.** If the blade has a **curve**, it must be a distinct curve which must be continuous, and the deflection must be less than 4 cm. Blades with sharply bent extremities or which curve in the direction of the cutting edge are forbidden.

**5.** The sabre blade must have a **flexibility** equivalent to a bend of minimum­ 4 cm and maximum 7 cm measured in the following way.

**a)** The blade is fixed horizontally at a point 70 cm from the tip of the blade.

**b)** A 200 g weight is hung 1 cm from the tip.

**c)** The curve is measured at the tip of the blade between the weighted and unweighted positions (see Figures 12 and 13, pp.20, 21).

**The guard** (cf. m.5)

**m.24.** **1.** The **guard** must be full in shape, made in one piece and externally smooth. It must have a convex form which is continuous, without rim or holes.

**2.** It must be able to **pass through** a rectangular gauge measuring 15 cm by 14 cm in section, with a length of 15 cm, the blade being parallel with the axis of the gauge.

**3.** Inside the guard there must be a **socket** into which the bodywire is plugged, whatever system is used.

**4.** The two sockets of the bodywire plug must be in **direct contact** with the body of the guard, making a closed electrical circuit through the body­wire, the spool and the cable connecting the spool to the scoring ap­par­atus.

**5.** The **resistance** in the weapon must not exceed 1 ohm.

**6.** The **interior of the guard** must be completely **insulated** by means of insulating paint or a pad.

**7.** The **exterior of the guard** must be **insulated** for 7–8 cm from the pommel.

**8.** The **handle and the pommel** must be completely **insulated**.

CHAPTER 2. EQUIPMENT AND CLOTHING

**GENERAL CONDITIONS**

**m.25.** **The national uniform** includes the socks, the breeches, the jacket, and the conductive jacket at foil and sabre (cf. m.28, m.34).

**1.** *Protection*

The equipment and clothing must provide the competitor with the **maximum protection** compatible with the freedom of movement necessary for fencing.

**2.** *Safety*

It must not be possible for the opponent to be **obstructed or injured** by the equipment, nor for it to have either buckles or openings in which the opponent’s point may be caught up — except accidentally — and thus held or deflected. The jacket and its collar must be completely buttoned or done up.

**3.** *Characteristics of the clothing*

**a)** Fencers’ clothing must be made of sufficiently **robust** material and be clean and in good condition.

**b)** The material from which the equipment is made must not have a **surface which is smooth** enough to cause the pointe d’arrêt, the button or the opponent’s hit to glance off (cf. m.30).

**c)** Clothing must be made entirely in cloth able to **resist a pressure of 800 Newtons.** Very particular attention must be paid to the way the seams under the armpits, if there are any, are made. An **under-garment** consisting of a protective under-plastron covering the vital upper areas of the body (following the design given in Annexe A to these Rules, ‘Safety norms for manufacturers’) resistant to 800 Newtons is also obligatory.

**d)** Fencers’ clothing may be of different colours, **apart from black**.

**e)** There shall be **only one** national uniform per country.

**f)** **Logos** (national strips) worn on the national clothing must be approved by the **FIE Executive Committee** at least 30 days before they are used for the first time in an official FIE competition; they are then published on the FIE website.

**g)** For the following events, the wearing of national strips (logos) is **compulsory** on both legs, optional on the arm(s). All the logos worn by any one fencer must be identical.

**i)** World Championships and World Junior and Cadet Championships: every bout, in the pools, in the direct elimination and in team matches;

**ii)** Individual Senior World Cup competitions: all direct elimination bouts from the 64 onwards;

**iii)** World Cup team competitions: all bouts in every match.

They must be **identical** for all fencers of the same federation for the above competitions i) and iii).

**h)** The **name** of the fencer must be displayed on the back of the jacket, with the abbreviation of the national federation below it, at the level of the shoulder blades. They must be printed directly onto the jacket or onto a cloth carefully sewn onto the jacket. The letters must be in **dark blue**, in capitals, between 8 cm and 10 cm high, and between 1 cm and 1.5 cm wide, according to the length of the name.

**4.** *Jacket*

**a)** At all weapons, for men and ladies, the lower edge of the jacket must **overlap the breeches** by at least 10 cm when the fencer is in the on-guard position (cf. m.28, m.34).

**b)** The jacket must include a **lining** making a double thickness of material for the sleeve down to the elbow of the sword arm and covering the flank up to the region of the armpit. At épée the fencer is required to wear a regulation jacket, which must cover the whole of the surface of the trunk.

**c)** The use of a **breast/chest protector** (made of metal or some rigid material) is compulsory for women and optional for men. At foil, this breast/chest protector must be worn below the protective plastron.

**5.** *Breeches*

**a)** The **breeches** must be fastened below the knees.

**b)** With breeches, the fencer must wear **socks** which cover the legs right up to the breeches. These socks must be held up in such a way that they cannot fall down.

**c)** The fencer is permitted to wearsocks with a turn-over showing the **colours of his national team** 10 cm high.

**6.** *Glove*

At all weapons, the **gauntlet of the glove** must, in all circumstances, fully cover approximately half the forearm of the competitor’s sword arm to prevent the opponent’s blade entering the sleeve of the jacket.

**7.** *Mask*

**a)** The **mask** must be made with meshes (space between the wires) of maximum 2.1 mm and from wires with a minimum gauge of 1 mm diameter. The mask must include a safety strap at the rear.

**b)** Masks, at all weapons, must be made in accordance with the **safety standards** described in Annexe A to these Rules and must carry the quality label specified in those standards.

**c)** When the **checks** are carried out the person responsible for them may, if in doubt, ensure that the mesh of the mask, both at the front and at the sides, is able to withstand, without permanent deformation, the introduction of a conical instrument, the angle of the surface of the cone being at 4° to the axis and at a pressure of 12 kg.

**d)** A mask which does not comply with the safety requirements laid down in this article will be rendered **visibly unusable** by the weapon checking personnel or the Referee in the presence of the person who presented the mask to the weapon check or the team captain of the fencer concerned.

**e)** The **bib** of the mask must be made with cloth resistant to 1600 Newtons.

**f)** The mask must contain a horizontal safety strap at the rear of the mask, with the two ends of the strap firmly affixed to the two sides of the mask.  This strap may be elastic or of any other material that may be approved by the S.E.M.I. Commission.

**RULES SPECIFIC TO FOIL**

**Glove** (cf. m.25)

**m.26.** The **glove** may be slightly padded.

**Mask** (cf. m.25)

**m.27.** **1.** The **mesh of the mask** must not extend below the chin. It must be insulated internally and externally by a plastic material resistant to impact.

**2.** The part of the bib that is beneath a horizontal line 1.5 - 2 cm below the chin, must be entirely covered with a material that has the same conductive characteristics as the conductive jacket.

**3.** The electrical contact between the conductive jacket and the mask must be ensured by means of a wire and one or two crocodile clips. The wire must be attached, either by means of a crocodile clip or by being soldered, to the mesh of the mask, and must be between 30 cm and 40 cm long. In the case of a coiled cable, the maximum length of the free cable must not exceed 25 cm in length, with a tolerance of ± 5 cm. The crocodile clip, the design and size of which must conform to the conditions laid down in Article m.29, must be soldered to the other end of the wire.

**Conductive jacket (over-jacket or plastron)**

**m.28.** **1.** The conductive surface of the **conductive over-jacket** which is worn over the protective jacket must cover the valid target of the fencer (cf. t.47) entirely and without omission when standing upright, when in the on-guard position and when lunging.

**2.** Whatever the **means of fastening** used, the conductive material must cover a sufficient area to ensure that it covers the valid target in all positions of the fencer. The overlap must always be on the sword-arm sid

**3.** The interior of conductive jackets must be electrically **insulated** by a lining or by an adequate treatment of the conductive lamé material.

**4.** The conductive **collar** must have a minimum height of 3 cm.

**5.** The **lamé** material used must be of conductive thread in both warp and weft. As regards electrical conductibility it must conform to the following requirements.

**a)** The **electrical resistance** measured between any two points of the lamé material must not be greater than 5 ohms. The resistance will be measured by using a 500 g copper or brass weight which has a hemispherical end with a radius of 4 mm. This weight, placed on this end and moved about on the lamé, must maintain continuous contact with a maximum resistance of 5 ohms.

**b)** In no circumstances must the use of a conductive jacket be allowed if it has **holes** in it, or **patches of oxidation** or other defects which may prevent the registration of a valid hit.

**c)** A conductive jacket which is considered to be **unusable** will be so marked with a very visible coloured paint by a member of the SEMI Committee of the FIE.

**6.** The conductive jacket **must be so made** that when it is laid flat there is a straight line between the point of junction of the lines of the groin and the two points corresponding to the tops of the hip bones (ilium).

**7 .** The band of **non-conductive material** passing between the legs must be at least 3 cm wide (see Figure 14, above).

**Bodywire and attachment plugs**

**m.29.** **1. a)** The conductive wires of the **bodywire** (the fencers’ personal equipment) must be well insulated electrically from each other, twisted or joined together, and not be affected by humidity.

**b)** This bodywire has a **connecting plug** at each end.

**c)** The **electrical resistance** of each of these conductive­ wires (plug to plug and plug to crocodile clip) must not exceed 1 ohm.

**2. a)** At the **spool end** the three-pin male plug, which must comply with the conditions of manufacture and assembly laid down in Article m.55, will be attached to the wires in the following manner­:

— the pin at 15 mm from the centre pin to the conductive jacket;

— the central pin to the wire in the weapon;

— the pin at 20 mm from the centre pin to the foil earth circuit   
 or the conductive piste.

**b)** The wire which joins the rear connection of the bodywire to the conductive jacket by a **crocodile clip** must be separate for at least 40 cm. This wire must be soldered to the crocodile clip and this soldering must not be covered by any insulation or any material whatsoever. However, any method of fixing which presents the same guarantees as soldering may be used, provided it has been accepted by the SEMI Committee.

**c)** The crocodile clip must be robust and ensure **perfect contact** with the conductive jacket. Its width at the point of contact must be at least 10 mm; the inside of the clip must leave a free space at least 8 mm long by 3 mm high. It must be clipped onto the back of the conductive jacket on the **sword-arm side**.

**3. a) At the end nearest the foil**, inside the guard, any method of attachment is allowed but the method adopted must always conform to the specification laid down in Article m.5.

**b)** In addition, the pins of the plug must in no circumstances be able to **touch the metal part** of the guard.

**c)** The wire from the point will be protected by an **insulated sheath** from the place where it enters the guard right up to the insulated connection on the plug socket. Under no circumstances may the non-insulated wire extend beyond this insulated plug connection (cf. m.5, m.9).

**RULES SPECIFIC TO EPEE**

**Mask**

**m.30.** **1.** The mask must not be covered, in whole or in part, by material which can **cause the point to glance off** (cf. m.25).

**2.** The mask must be so shaped that the **bib** reaches below the prominences of the collar bones (clavicles).

**Bodywire**

**m.31.** **1. a)** The **conductive wires** of the bodywire (the fencers’ personal equipment) must be well insulated from each other, insensitive to humidity, and either joined or twisted together.

**b)** The maximum **electrical resistance** allowed for each of these conductive wires from plug to plug is 1 ohm.

**2.** The bodywire has a **connecting plug** at each end.

**3.** At the **spool end**, a three-pin male plug is connected to the wire as follows:

**a)** the pin 15 mm from the centre pin to whichever wire is most directly connected to the pointe d’arrêt;

**b)** the centre pin to the other wire on the épée;

**c)** the pin 20 mm from the centre pin to the épée’s earth circuit and to the conductive piste.

**4.** This plug must conform to the conditions of manufacture and mounting specified in Article m.55.

**5. Inside the guard** the choice of system is free but the system chosen must comply with the conditions of Article m.5.

**6.** In addition, the pins of the plug must not on any account permit **contact with the metal** of the guard.

**7.** The two wires coming from the tip must be protected by **two insulating sheaths**, one for each wire, from the point where they enter the guard right up to the two insulated connections on the plug socket. In no case may uninsulated wires extend beyond the plug connections (cf. m.5, m.9).

**RULES SPECIFIC TO SABRE**

**Mask**

**m.32.** **1.** The **metal mesh of the mask** must not be insulated and must ensure electrical conductivity.

**2.** The **bib and any trim** must be entirely covered with conductive material with the same electrical characteristics as the conductive jacket.

**3.** The **trim** may also be made of conductive material.

**4.** The **electrical resistance** between the crocodile clip and any point on the mask must be less than 5 ohms.

**5.** The **electrical contact** between the conductive jacket and the mask must be ensured by means of a wire and one or two crocodile clips. The wire must be attached, either by means of a crocodile clip or by being soldered, to the mesh of the mask, and must be between 30 cm and 40 cm long. In the case of a coiled cable, the maximum length of the free cable must not exceed 25 cm in length, with a tolerance of ± 5 cm. The crocodile clip, the design and size of which must conform to the conditions laid down in Article m.29, must be soldered to the other end of the wire.

**Glove**

**m.33.** **1.** The **conductive material,** which may be removable or fixed, of the regulation glove of the fencer’s sword arm must cover all the sleeve down to below the external cubital styloid (small prominent bone of the wrist), both when the fencer is in the ‘on-guard’ position and when the sword arm is straight.

**2.** The **conductive material** must be turned over into the inside of the gauntlet to a depth of at least 5 cm.

**3.** In order to guarantee **a good contact** with the sleeve of the conductive jacket, it is necessary to use an elastic band, a popper button or any system which will guarantee conductivity and which has been approved by the SEMI Committee. When a conductive overglove is worn, the overglove must contain a device which fixes the position of the overglove on the arm so that its position on the arm cannot be changed during the bout.

**Conductive jacket and conductive t-shirt**

**m.34.** **1.** The fencer must wear, over his jacket, a **conductive over-jacket**, the conductive surface of which must cover entirely and without omission the valid surface of the body above a horizontal line which, when the fencer is on guard, joins, round the fencer’s trunk, the upper points of the creases formed by the thighs. At wireless sabre the fencer must wear a **conductive t-shirt**. The conductive part is made of a conductive fabric with an electrical resistance which, measured between any two points of the conductive fabric, must be less than 5 ohms.

**2.** The **conductive surface** must cover the arms as far as the wrists. The jacket must have a collar which is at least 3 cm high. The jacket must have a conductive flap, 2 cm  3 cm in the middle of the back, just below the collar, to which the crocodile clip from the mask can be attached.

**3.** Whatever means of **fastening** is used, the conductive material must be ample enough to guarantee covering the valid target area in any position­.

**4.** The **conductive material** (lamé) must satisfy the conditions laid down for testing (cf. m.28).

**5.** The **sleeves** of the conductive jacket must be fixed at the wrist by means of an elastic band. There must be a strap passing between the fencer’s legs to keep the jacket in place (see Figure 15, p.29).

**Bodywire and plugs**

**m.35.** The fencer must use the **bodywire** specified for foil, plugged into the guard plug socket by means of any system which conforms with the conditions for manufacture and assembly laid down in Articles m.5, m.29 and m.55.

CHAPTER 3. CHECKING OF MATERIAL

**COMPETENCE**

**m.36.** **1.** The **checking of the electrical material** used by the organisers for the World Championships (Open, Junior and Cadet) and the fencing competitions of the Olympic Games, as well as the checking of the fencers’ equipment, must be supervised by the SEMI Committee.

**2.** To carry out this supervision, **three members** of the above-mentioned Committee must be appointed and put in charge of this work. However, when the organising country possesses somebody competent, two members of the above Committee will be appointed.

**3.** The delegates of the Committee for Electrical Apparatus and Equipment (SEMI) **have the right** at any time to seize a weapon, a bodywire, a conductive jacket or any item of equipment or clothing for examination.

**CHECKING OF FENCERS’ EQUIPMENT**

**m.37.** **1.** In all official FIE competitions **the fencers are responsible** for their equipment (including weapons and clothes) at the moment they present themselves on the piste.

**2.** In particular blades, masks and clothing must all carry the **label of guarantee** specified in the safety standards annexed to these Rules.

**3. The forms of checking** laid down by these Rules are only intended to help organisers who must apply the Rules and fencers who must always respect these Rules. These checks can, therefore, in no way absolve any fencers who break the Rules from responsibility.

**Presentation of equipment to the Weapon Checking Centre**

**m.38.** **1.** Fencers are obliged to **present themselves** at the Weapon Checking Centre, at the time advised in the timetable of each official competition of the FIE, with the equipment they intend to use during the event referred to. The number of articles handed to the Checking Centre is limited to four weapons, two bodywires, two conductive jackets, two masks and two mask-to-jacket leads per fencer.

**2.** Each competitor must **submit his weapons** in a fencing bag at the Weapon Checking Centre reception. An inventory of the equipment is made by an organising official and a label is put on the bag, indicating the name of the country of the competitor. The bags are stored in the order in which they arrive, and are checked in the same order.

**3.** Provision should be made for weapons and clothing to be submitted on the **morning of the day before the competition**. Having been checked, the material will be returned to the delegations at the end of the day.

Weapons, equipment and clothing presented to the Checking Centre after 5 p.m. on the day before each event may be refused.

**4.** Each **head of delegation** must indicate where he can be contacted should a serious fault be detected while the equipment belonging to his fencers is being checked.

**5.** If a weapon is found to be **defective** at the first check a form is attached indicating the fault: e.g. the length of the blade, the insulation, the spring of the point, cutting edges, etc. This form is completed at the second check. However, when a weapon is rejected, it must go through the entire cycle again.

**m.39.** **1.** If material or equipment presented to the Checking Centre appears **to have been assembled** in such a way that the fencer can control at will the registering of hits or the malfunctioning of the judging apparatus, the representative of the SEMI Committee may, after the examination of the irregular items, require a penalty against the person who submitted them.

**2.** The fencers or the team captain can only insist on the **return of the equipment which has been checked** one hour before the start of the event.

**3. Any repairs** to equipment rejected during the checking can be carried out in the repair workshop. Repaired equipment will, however, only be tested again after the first set of checks of the other fencers’ equipment has been completed.

**Checking body**

**m.40.** **1.** The **Executive Committee** of the FIE will appoint the member(s) of the SEMI Committee to be responsible for the checking of weapons, clothing and equipment of the fencers at the fencing competitions of the Olympic Games and for the World Championships.

**2.** For other official FIE competitions the **Organising Committee** will appoint one or more persons to be responsible for this checking.

**m.41.** The items of equipment which have been thus checked will be **distinctively marked**. A fencer must not, on pain of penalties (cf. t.120), use any equipment which does not bear this check mark.

**Checking personnel and equipment**

**m.42.** **1.** In order to allow those carrying out the checking to fulfil their task, the organisers are required to make available the **equipment** (gauges, weights, scales, electrical measuring machines, etc.) and the personnel necessary to carry out the work.

**2.** The Organising Committee must provide the FIE technical delegates responsible for checking the weapons and equipment with at least **the following apparatus:**

**a)** Two **gauges** allowing the lengths of blades and the depths and diameters of the guards at all weapons to be measured quickly.

**b)** Devices for measuring the **flexibility of blades** and the **resistance of the mesh** of masks.

**c)** An electrical checking device to check quickly that the electrical **resistance** of the point is not too high, and that the bodywire and the weapon are **correctly assembled.** Devices enabling these measurements to be taken easily are, in fact, commercially available.

**d)** **Weights** of 750 g and 500 g to test the springs of the points in épée and foil, in the workshop and at each piste.

**e)** A device allowing the **lighting stroke** and **residual travel** of épée points to be accurately measured, in the workshop and at each piste.

**f)** **Labels** to indicate that a weapon has been checked and that it satisfies the regulation, or has been rejected.

**g)** The organisers must provide a **special stamp** to be affixed to each con­ductive jacket to enable the referees to verify that its resistance in ohms has been checked by the technical delegates of the FIE. Nevertheless­, this compulsory checking mark is not sufficient to justify the use of the jacket. In effect, it is the task of the Referee to check, before each event, that the conductive jacket, having been checked and marked, entirely covers the valid target area, and accord­ingly to make the final decision whether it may be used.

**h)** A special **ink or paint** must be provided to mark the guards, blades and points of weapons which have been checked. Nevertheless, those responsible may use other methods to mark the weapons and conductive jackets.

**m.43.** **1.** To carry out the checks properly and rapidly, **‘workshop’ teams of three people** should be used. (At least three such workshops should be provided.)

**2.** The first person checks that all the weapons are normal with respect to their **dimensions** by passing them through a gauge.

**3.** The second does all **electrical** tests.

**4.** The third affixes the **checking marks** and replaces the weapons in the fencing bag.

*PART 2. FITTINGS AND MATERIAL   
PROVIDED BY THE ORGANISERS*

**Introduction**

**m.44.** **1.** All **electrical judging equipment** includes, in addition to the equipment provided by the fencers themselves, the material provided by the organisers of a competition, which is:

**2.** The **central judging apparatus**, with extension lamps (cf. m.51, m.59, Annexe B);

**3.** The **spools**, with cables and connections, or cables suspended overhead (cf. m.55);

**4.** The **conductive piste** which neutralises hits made on the ground (cf. m.57);

**5.** The **source of electrical current** (accumulators) (cf. m.58);

**6.** For finals of official competitions of the FIE, a **clock** which counts down the time and which can be linked to the apparatus which controls the audible signal and the electrical registering of hits (cf. m.51, Annexe B).

CHAPTER 1. SCORING APPARATUS

**Authorised designs**

**m.45.** Only electrical apparatus designed with **wires connecting** the fencers to the central apparatus and registering hits by light signals with auxiliary sound signals are authorised, except for apparatus without wires using encoded waves authorised by the SEMI. This **excludes other apparatus based on wireless waves** and those which register sound signals only.

**Approval of designs of apparatus**

**m.46.** **1.** Judging apparatus for use in a **World Championship or an Olympic Games** must have been approved by the Committee for Electrical Apparatus and Equipment (SEMI) of the FIE.

**2.** In order to obtain this approval, the apparatus which it is proposed to use must be submitted **complete**, with spools, connections, etc., for an exam­ination by the said Committee, at a place and on a date to be agreed with the Committee, at least six months before the date of the competition.­

**3.** The apparatus must be accompanied by a **detailed drawing** showing its construction.

**m.47.** **Approval** is given for the use of the apparatus in one specific official competition only. The SEMI Committee is willing, as far as it is able, and without charge, to examine prototypes of apparatus submitted by constructors even if the use of such apparatus is not envisaged for an imminent official competition.

**m.48.** **1.** Approval is given for only one **established design** of apparatus which conforms to the drawing submitted, and is not given as a general approval for all the products made by any manufacturer. The latter may state in their publicity only the fact that the design of apparatus which they offer for sale has been used at a specific official competition (if this in fact is the case); but they themselves must guarantee that the apparatus conforms to the design for which approval was given.

**2.** Every approved apparatus must carry, on its base, a **metallic plate** identifying its specific characteristics: manufacturer, year of manufacture, model, technical information, etc.

**m.49.** The **approval of an apparatus by the SEMI Committee** as well as its acceptance implies no guarantee against possible faults of construction, or against its use with a source of electrical current other than accumulators (cf. m.58).

**m.50.** All **expenses** incurred by the SEMI Committee for the examination of apparatus are the responsibility of the persons submitting the apparatus.

**Requirements for all electrical equipment** (cf. Annexe B)

**m.51. 1.** A hit made on the **conductive piste or on the metallic parts of the weapon** must not be registered by the apparatus, nor may it prevent the registering of a hit made simultaneously by the opponent. At foil a hit made on a part of the foil may register if an uninsulated part of the weapon of the fencer is in contact with his conductive jacket.

**2.** The apparatus must not have any device whereby anyone other than the person detailed to supervise it **can interrupt its working** during a bout.

**3.** Hits are registered by **visual signals**. The signal lamps must be placed on the top of the apparatus, in order that they may be visible to the Referee, the competitors and the superintendent of the apparatus. They must be so positioned that they show clearly from which side the hit was made. Arrangements must be made so that **extension lamps** can be added to the exterior of the apparatus, in order to increase the visibility of the signals.

**4.** Once the signal lamps are alight, they must **so remain** until the apparatus is reset, without having any tendency to go out or flicker either when subsequent hits are made or if the apparatus is subjected to vibrations.

**5.** The visual signals must be accompanied by **audible signals** (cf. Annexe B).

**6.** The **resetting switches** must be placed either on top of or on the front part of the apparatus.

**7.**  **a)** For official competitions of the FIE, the **source of power** must always be accumulators. The wiring of the box to be powered in this way must be designed so that it is impossible for the box to become connected by mistake to the mains supply.

**b)** All fencing salles, clubs, etc., and the organisers of training sessions or competitions involving weapons using electrical equipment, may use the current supplied by the mains on condition that they adhere strictly to the technical standards laid down on the subject by their countries and international communities.

**8.**  **a)** If the **clock** is not incorporated in the electrical judging apparatus, the apparatus must have a system for linking in an external clock. This clock must be powered by electricity from a 12 volt accumulator. A disconnection of the wiring which links the clock to the apparatus must cause, simultaneously, the blocking of the apparatus which registers hits, in a manner which preserves what it has registered up to that point, and the stopping of the clock.

**b)** To allow the apparatus to be used **when it is not connected to the clock**, there must be a switch in the interior of the apparatus which can change its operating mode (cf. t.32, m.44).

**9.** For the **finals** of official competitions of the FIE, the clock must be equipped with a system which connects it to some external extension clocks displaying large luminous numbers, and with another system for the connection of the audible signal. These two connection systems must be separated from the circuits situated inside the central judging apparatus by means of opto-couplers (cf. t.32, m.44).

**10.** When the cable connecting the audible-signal apparatus to the clock is **disconnected**, the audible-signal apparatus must emit a sound of between 80 and 100 decibels (measured at the centre line of the piste) lasting between 2 and 3 seconds, but the central judging apparatus must not be blocked and the clock must not be stopped (cf. t.32, m.44, m.51/9).

**Number and quality of judging apparatuses**

**m.52.** **1.** For official FIE competitions, the organising committee must provide a **minimum number of electrical judging apparatuses** equal to the number of pistes plus at least two spares. All the apparatuses must be in perfect working order, and of a type approved for the World Championships.

**2.** As soon as a member federation is **selected to organise** an official FIE competition, it would do well to contact the President of the SEMI Committee immediately in order to obtain the names of manufacturers whose electrical apparatus is accepted by the Committee.

**3.** The Organising Committee usually prefers combined apparatus, which can be used for all three weapons. The Organising Committee must choose a manufacturer who will provide good quality equipment for the smooth technical running of competitions; this equipment must be approved by the SEMI Committee.

**4.** For official FIE competitions, it is compulsory that the apparatus be powered by **accumulators** without any connection to the main electrical supply.

**Checking of apparatuses**

**m.53.** **1.** Having chosen the manufacturer with which it wants to deal, the Organising Committee immediately advises the President of the SEMI Committee of the FIE who in turn contacts this firm to obtain, as soon as possible, a **prototype** of the desired model.

**2.** The report on the **checking** of the apparatus is always returned to the manufacturer by the President of the Committee within one month of the apparatus being received.

**3.** There are then two possibilities:

**a)** The proposed apparatus is accepted by the Committee, in which case the other apparatuses can be manufactured like the prototype­.

**b)** The apparatus does not conform to the requirements, in which case it must be modified and re-submitted to the Committee for a new examination.

**4.** When all the apparatuses are ready and before they are sent out, the President of the SEMI Committee must be notified, so that he can document the **checking of the apparatuses** before they leave the factory. Each apparatus comes with a test report giving the different specifications concerning the registering time in milliseconds and the resistance in ohms of the external circuits before registering a non-valid hit.

The person in charge of verification ticks off every apparatus and makes a note of its number.

**m.54.** **1.** Before every World Championship or Olympic Games, a delegate of the SEMI Committee must check the **proper working of the apparatuses** to be used and that they conform to the type registered. This is independent of the registration of the type of apparatus mentioned above (cf. m.52).

**2.** The apparatuses must be **made available to this delegate** at least 48 hours before the beginning of the competition.

CHAPTER 2. SPOOLS, CABLES AND   
THEIR CONNECTIONS

**m.55. 1.** The maximum **electrical resistance of each wire of the spool**, measured from socket to socket, must be 3 ohms.

**2.** There must be no **interruption of electrical contact** even when the spool is being rotated at full speed. To ensure this the contact rings must have double brushes. The wire connected to the blade of the weapon will be connected to the frame of the spool.

**3.** The spools must allow 20 m of cable to be **unwound** without straining the springs.

**4.** The socket which terminates the spool cable, and is designed to receive the plug of the bodywire at the fencer’s back, must include a **safety device** which fulfils the following requirements:

— that it is impossible to use it unless the plug is correctly put in;

— that it is impossible for it to become separated during the bout;

— that it is possible for the competitor to verify that the two fore­going requirements are satisfied.

**5.** The **resistance** of each of the three wires in the connecting cables must not exceed 2.5 ohms.

**6.** The plugs used to **connect the bodywire** to the spool wire and the connecting cables to the spools and to the apparatus must have three pins of 4 mm diameter arranged in a straight line. The external pins must be spaced 15 and 20 mm respectively from the centre pin. The bodywire and the connecting cables have plugs, the spool wires and the central electrical apparatus have sockets to them.

**7.** The use of **suspended cables** instead of spools is permitted, provided that the conditions already mentioned are satisfied.

**m.56.** **1.** The organisers must ensure that the spools have cables of at least **20 m in length** so that they do not get ripped out in the event of a flèche made at the end of the piste.

**2.** It is desirable for the **spools to be placed** close to the pistes, but outside them so that fencers do not trip over them.

**3.** The **cables** connecting the spools to the apparatus should be of the three core type and be covered with rubber to protect them from humidity and blows.

**4.** Conductive pistes **should be earthed** at the centre of the piste.

**5.** Those in charge of checking equipment during competitions must have a simple and practical device at their disposal to allow them to **check quickly** that there are no breaks or short-circuits in the three wires of the spools.

CHAPTER 3. CONDUCTIVE PISTES

**m.57. 1.** The **conductive piste** must be made from metal, metallic mesh or some substance with a base that is conductive. The resistance of the piste, from one end to the other, must not exceed 5 ohms.

**2.** The conductive piste must **cover** the whole of the length and breadth of the piste including its extensions, in order to neutralise floor hits.

**3.** **a)** When the piste is mounted on a **platform** the conductive piste must cover the whole width of the platform.

**b)** The platform must not exceed **50 cm in height**, and must be wider than the fencing piste itself by at least 25 cm on each side. Each end of the podium must be equipped with a **gentle slope** right down to ground level.

**4.** Because the amount of wire which the spools can carry is limited, the conductive piste is designed for use on a **piste 14 m long**; an extension of 1.50–2 m is added at each end of the piste to allow the fencer crossing the rear limits of the piste to retire on an even and unvarying surface. The conductive piste must therefore have a length of 17–18 m.

**5. a)** It is preferable to lay the conductive piste on a **wooden base** with some flexible material between. It must be provided with some device which enables it to be kept well stretched.

**b)** The wooden bases are **12–15 cm** above ground level. Their sides must not be sloping.

**c)** It is preferable to have a **metal strip**, screwed down if possible, which will keep down the edges of the conductive piste along the entire length of the base on both sides.

**d)** Pistes made of **metallic mesh** must never be placed directly on a floor of reinforced concrete or tiles.

**6.** The **paint** used to draw the lines on the conductive piste must not prevent its electrical conductibility, so that a hit made on it at a point where a line occurs is also neutralised.

**7.** The organisers must have equipment for the immediate **repair** of the piste available on the spot.

**8.** There must be no roller or any sort of **obstacle** at the ends of the conductive pistes which could prevent the fencers from retreating normally.

CHAPTER 4. SOURCE OF ELECTRICAL CURRENT

**m.58. 1.** The apparatus must be based on a **12 volt supply** (± 5%) or, if the sources of current for each side of the apparatus are separate, on 2  12 volts or 2  6 volts. (The separation of the supply for each side of the apparatus is recommended because it can simplify a number of problems met in the construction of apparatus for foil.)

**2.** The apparatus may include warning lights to indicate that it is switched on. Such lights should be colourless.

**3.** If the apparatus is constructed to operate with **dry batteries**, it must be equipped with a voltmeter or some other device enabling the power in the batteries to be checked at any moment. However, the apparatus must always be e**quipped with a socket**, as described above, to allow it to be powered by accumulators.

**4.** Generally, there should be **two batteries** available per apparatus: 12 volt car batteries are used, of 60 or 90 amps/hour.

CHAPTER 5. EXTENSION LAMPS

**m.59.** **1. a) Extension lamps** outside the apparatus are obligatory for the official competitions of the FIE.

**b)** The lamps should be placed at a minimum of **1.80 m** above the piste. (When the fencers fence on a 0.50 m high podium, the extension lamps must be 2.30 m above ground.)

**c)** The extension lamps signalling **valid hits** are coloured, one red, the other green, and they should if possible be of 150 watts.

**2. a)** The **white lights** indicating non-valid hits may be of only 75 watts.

**b)** The two lamps of the same group must not be **further apart** than 15 cm and each group must be at least 50 cm from the other.

**3. The white and coloured extension lamps** must be arranged on either side of the apparatus, either horizontally or vertically, and must be visible from all directions (cf. Annexe B, paragraph A.1.(a).2).

**4.** Lamps recording the **number of hits** scored may not be located alongside the extension lamps.

**m.60.** **1.** The exterior lamps of high intensity may be connected to the main electrical supply, but in this case the signals of the recording apparatus have to be separated from the circuits of these lamps by phototransistors or by opto-couplers.

**2.** Visual indicators recording the **number of hits** given by each fencer by means of numbers on the extension lamps are obligatory. These illuminated indicators may operate direct from the main electrical supply.

**3.** For World Championship and Grand Prix finals and Masters, it is obligatory to make use of a **display board** of the type shown in the drawing in Annexe C, providing instantaneous information on the fencers’ names, the score, the time and other matters necessary for a good understanding of the bout.

**4.** This score-board must, if possible, be used for **A Grade finals** as well.

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