

## Chapter 1: The Net Assembly

### Introduction

The net assembly forms an important part of the equipment used in the game of table tennis. Therefore, if it does not look neat, or if it is difficult to set up and adjust, it should not be used during competitions. To receive ITTF approval, a net assembly must be above average in most respects such as function and safety, ease of installation and adjustment, robustness and appearance. Although this leaflet refers to some specific methods of construction, the ITTF does not wish to restrict manufacturers to these methods except where they are prescribed by the Laws and Regulations or the criteria for approval. Experiment and innovations are encouraged.

### Terms of reference

The **Laws of Table Tennis** relating to the net assembly are:

#### 2.02: The Net Assembly

2.02.01: The net assembly shall consist of the net, its suspension and the supporting posts, including the systems attaching them to the table.

2.02.02: The net shall be suspended by a cord attached at each end to an upright post 15.25cm high, the outside limits of the post being 15.25cm outside the side line.

2.02.03: The top of the net, along its whole length, shall be 15.25cm above the playing surface.

2.02.04: The bottom of the net, along its whole length shall be as close as possible to the playing surface and the ends of the net shall be as close as possible to the supporting posts.

### International Regulations

Regulations for International Competitions (3.02.01.02) state that "... net assembly...shall be selected from brands and types currently approved by the ITTF".

### The function of the net assembly

The net assembly is intended to provide an obstacle without, at the same time, increasing the probability of a player gaining a lucky point. As far as possible, a ball hitting the tape should fall back on the hitter's side, or it should bounce forwards and after touching the tape it should not roll over to the receiver's side. This implies that the tension along the top of the tape should be high, while that below the top should be significantly lower without being too loose. If the converse is true, the tape and fabric risk supporting a ball that hits slightly below the top of the tape. Hence, if it has topspin (i.e. if it is rotating forwards) the combination of rotation and the friction between the ball and the tape can cause the ball to rise. If it rises far enough, it can climb over the net and fall short on the far side.

To prevent this, the fabric must:

- a) be suspended by a cord, which must be tight and
- b) be attached relatively firmly to the posts but hanging from the cord.

A ball hitting slightly below the cord of such a net will tend to push the net forward under the cord, and it may not climb the net.

Some net assemblies are available which, although satisfactory in other respects, have no suspension cord, being suspended by tension applied from top to bottom of the post. This is absolutely unacceptable for competition, and nets so constructed shall not be approved by the ITTF or used in tournaments.

Apart from its function of making the top of the net clearly visible by its colour, the tape is merely a means of suspending the mesh from the cord.

It will be readily seen that the art in designing a net assembly lies in devising a means of suspension so that the assembly can be readily set up, adjusted to the correct tension and height, and dismantled.

## Guidelines for manufacturers

In this leaflet “net” refers to the fabric, “net post” to the upright and horizontal part of the post and the systems to attach it to the table and “net assembly” to the whole structure.

The net posts may be cast, moulded or machined, although well-designed sheet-metal work can be adequate and may be approved. The upright post is preferably fixed integrally to the horizontal part. The dimensions given under criteria for approval have to be observed.

**Figure 1:** Net supporting post

- 1 upright post
- 2 height adjustment
- 3 horizontal part of the net post
- 4 attaching system (clamp)

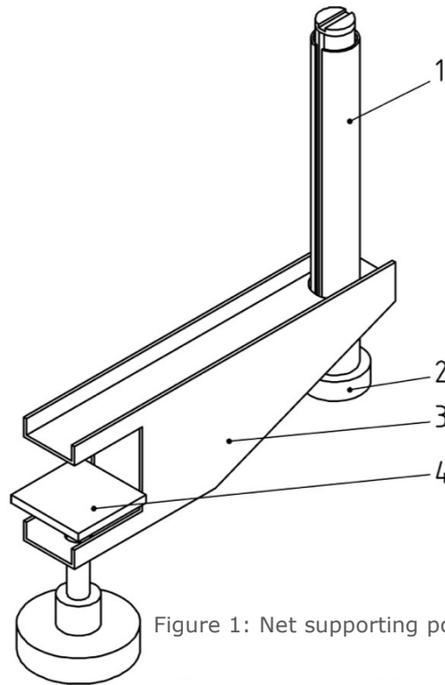


Figure 1: Net supporting post

## Criteria for approval

No net assembly will be approved by the ITTF unless it complies with the following requirements:

1. The net shall be of soft, dark mesh and shall have a white or pale yellow top (tape) not more than 15mm high. The height of the net, set up on the table, shall be at least 145mm.
2. The net shall be attached at each end from top to bottom of the upright posts, but the tension in the net itself, due to its attachment to posts, shall be significantly less than that in the suspending cord to allow the net to hang from the cord. No part of the net shall touch the table or the horizontal part of the clamp.
3. The net itself should be attached to the posts from top to bottom. This does not preclude attachment to an auxiliary post, or to a structure that fits inside the post, but it does rule out attachment at the top and bottom only. The net is attached to the post, not to apply tension, but simply to prevent the net from pulling away from the post and thus permitting the ball to go through. The fabric should be loose (see under tension adjustment). Although the fabric should be loose compared with the tension in the cord, it should not be so loose that a ball can easily pass under it, between the net and the table. The bottom of the net should be very close to the playing surface, preferably almost in contact with it.
4. There must be both a cord and a tape or binding. The height of the tape must be no greater than 15mm and it must be white or pale yellow. The mesh and tape shall be soft (i.e. not stiffened by a resin coating, metallic or composite threads) in order to permit the tape to lie flat along the cord rather than to project above it. This requirement also implies that the mesh should be made of spun fibre rather than single filament. The knots should be firm and regular. In order to minimize the chance of a spinning ball climbing up the fabric, the mesh shall not be less than 7.5mm square or more than 12.5mm square. A circular or hexagonal mesh may be considered providing it falls within the 12.5mm square section. At its ends, unless the mesh is firmly attached in some way inside the posts, some binding will be necessary. This can be of plastic material, although plastics tend eventually to tear, or of cloth, but in any case it shall be of approximately the same or a darker colour as the mesh.

Figure 2: Front view

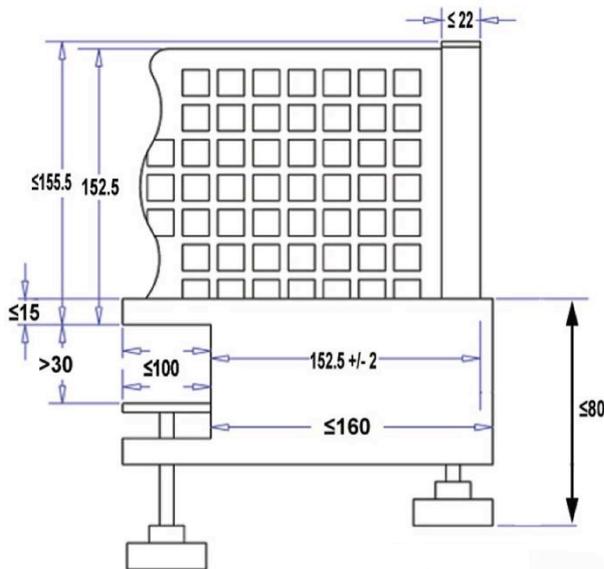


Figure 2: Front view

Figure 3: Side view

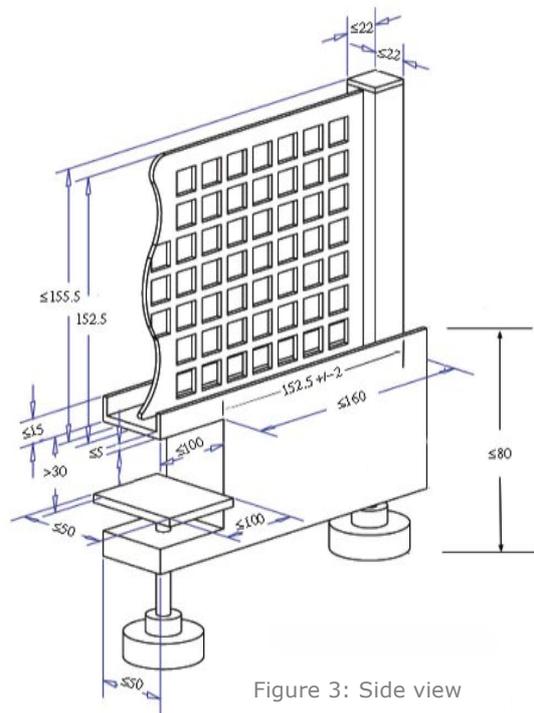


Figure 3: Side view

The sewing along the tape at the top of the mesh serves two purposes:  
 (a) It confines the cord, and (b) it holds the mesh.

We draw the attention of manufacturers to the fact that combining these functions into one line of sewing presents a difficulty. It is not easy to make that line of sewing absolutely straight and parallel to the playing surface. If it is not everywhere absolutely parallel to the mesh, then when the mesh is tensioned between the posts, however loosely, it will tend to align itself parallel to the table top, and the top of the tape cannot: parts of it will stand up from the cord, and will be further from the playing surface than the maximum height permitted.

Possible solutions to this problem, besides more care in sewing, include different tape materials that will hang more limply, and an extra line of sewing much closer to the cord and not in the mesh at all.

5. The structure of the upright post shall guarantee that the net can be suspended exactly at a height of 152.5mm above the playing surface in all circumstances: the adjustment device of a correctly clamped net assembly shall allow arranging any height between  $152.5 + 4.5$  mm and  $152.5 - 4.5$  mm.
6. The upright post shall be of the same height of 152.5 mm with a tolerance of 3mm. The outside limit of the upright post is  $152.5\text{mm} \pm 2\text{mm}$  away from the side of the tabletop (figure 4).
7. The cross-section of the upright post shall be capable of being circumscribed by a 22mm square, and any device for adjusting the height of the net or the tension in the suspending cord shall not project more than 7mm outside the upright post.

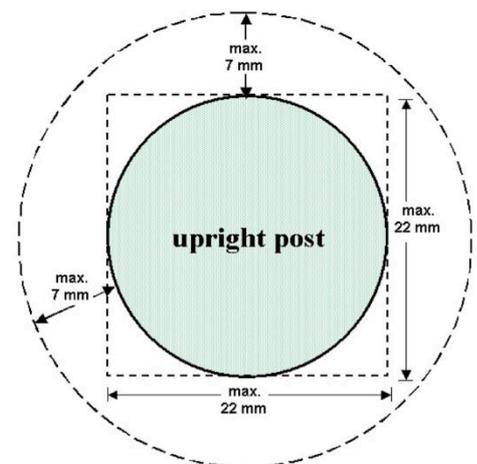


Figure 4: Cut through upright post

8. The horizontal part of the net supporting post shall not project more than 160mm outside the table-top side and not more than 100mm across the table surface towards its centre; for tables attached with a screw or spring clamp to the playing surface, this projection shall not be less than 80mm. The full height of the outside portion of the horizontal part shall not be more than 80mm, including any adjusting device. The height of the portion above the playing surface of the horizontal part shall not be more than 15mm. The width of the horizontal part shall not be more than 45mm and any device for adjusting the height of the net or the tension in the suspending cord shall not project more than 7mm on both sides (**figure 5**).

9. Under the net, there may be a channel in the horizontal part of the net post, at least 4mm wide, and whose bottom shall be not more than 5mm above the playing surface.

10. The upright post shall be of a single colour, neither white nor yellow, and its surface shall be matt.

11. No part of the net assembly shall be liable to hurt the operator or player or to damage the table-top; a change in height, thickness or width shall neither be abrupt nor generate sharp or pointed edges or corners.

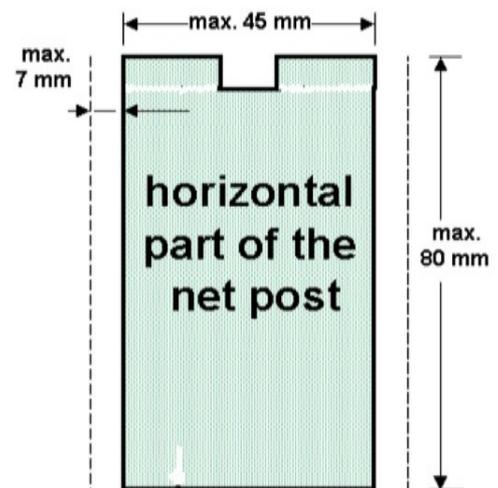


Figure 5: Cut through the horizontal part of the net post

## The clamping system

### Removable clamping

Net supporting posts are removable if they need to be removed when the table is closed to the storage position.

The clamp should be easy to attach to the table firmly but without causing damage. Unless designed for a specific table, it must fit as many tables as possible. Since the ITTF has recommended dimensions for the table at the point of attachment of the net, clamps should be designed with those dimensions in mind. The clamp should project no more than 100mm under the table-top, it should be no more than 50mm wide under the table and its opening should be at least 32 mm or more.

Most supporting posts are attached to the playing surface by a **C-screw clamp**. The clamp screw should be easy to operate with the finger and thumb. The lower jaw of the clamp, no more than 30mm square, should not rotate with the screw to avoid wearing away the underside of the table and it should carry no projections that can make an impression in the wood. It should be cushioned with a strong, protecting material, without causing the post to wobble under tension. The underside of the upper jaw should be similarly designed.

A **spring clamp** may be used to attach the net post to the table. The spring should be strong enough to resist tension in the net cord, which would otherwise tend to pull the posts toward each other using a clamping force of minimum 290 N and maximum 400 N. A safety clearance of at least 12 mm shall exist for the fingers when the clamp is removed from the table. The manufacturers shall also keep in mind some safety precautions when designing the spring clamp:

- The length of the movable clamping arm may be chosen to guarantee the strongest attachment.
- The higher the clamping force is, the longer the handle of the clamp shall be in order to reduce the force required for its opening
- The opening range of the handle shall be as small as possible allowing smaller hands to grip it and squeeze it to the net post.

## Permanent clamping

Net supporting posts are permanent if they do not need to or cannot be removed when the table is closed to the storage position.

A permanently attached net supporting post can be affixed either to the frame of the tabletop or to the undercarriage or to both. It should accept most of the approved nets and should be designed such that the net can be easily changed should that be necessary.

Any parts of the attaching devices that are wider than 45mm shall observe the following conditions:

- at least 12mm below table-top level.
- length along the table-top side not more than 100mm from the net end.
- gap between device and table-top side at least 15mm, to avoid shearing.
- not more than 30mm outside of the table-top side.

Any other parts of the attaching devices of the net post, less wide than 45mm, shall observe both the restrictive dimensions given for the undercarriage of the tables and for the horizontal part of the net post. The sides of the horizontal part of the net supporting post must be designed in a way to allow a clear visual distinction between post and attaching or undercarriage parts.

Although it is desirable that a net assembly can be attached to any type of approved table, it will be seen from the above that some cannot. The manufacturer of such an assembly must be prepared to reach a restricted market.

## Trademark or brand name

The ITTF will make its best effort to ensure that the trademark or brand name does not infringe on the already existing nets brands. The ITTF is not responsible for any illegal use of registered trademarks. Verifying the correct and legal use of trademarks is not part of the ITTF approval procedure.

## Country of origin markings

Applies for ALL nets produced and distributed after October 2015:

On the package:

If **all** is made and assembled in the same country, simply print: «**Made in <Country>**»

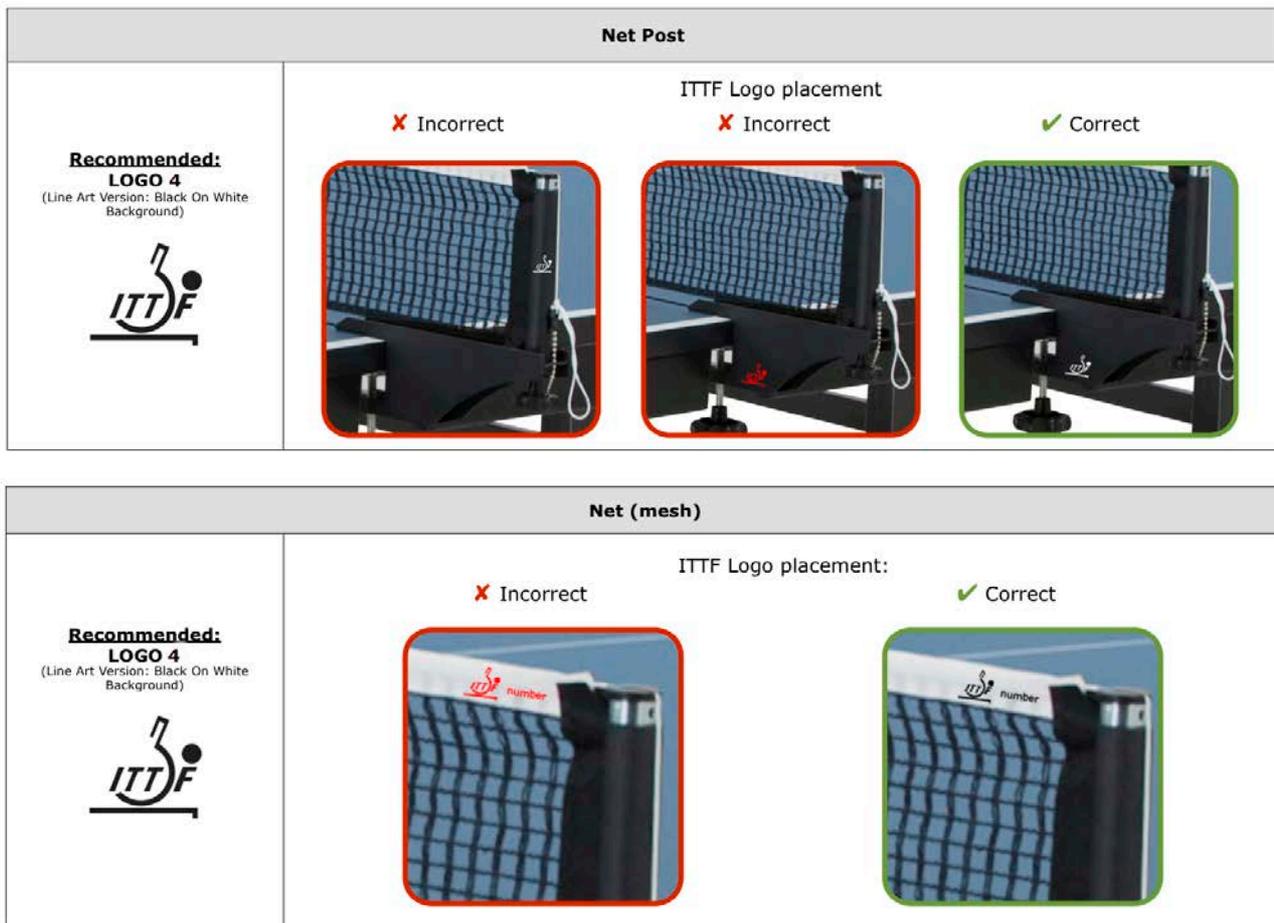
If the posts and the net mesh are made in **different countries**, print (all together not one of the two): "**net post made in <Country 1>, net mesh made in <Country 2>**".

### Advertisements and Identification

The manufacturer’s name or logo, the name of the net assembly and the ITTF logo should must appear **permanently** only on the horizontal part of the ITTF-approved net post.

An approved net must have the ITTF logo and the manufacturer’s code number for nets, either printed either on one tag 7 x 30 mm of which one side shall be sewed on the side binding or the top tape; In both cases the ITTF logo and the identification should be close to the net post.

The ITTF logo can be in black or white, depending on the background colour, but not in any other colours.



For more information, please refer to the ITTF Branding Guidelines v3.0 here: <http://bit.ly/2ybHNbw>  
 All versions needed, of the ITTF logo, can be found here: <http://tiny.cc/ittflogos>

Other **non-permanent advertisements**, agreed by the tournament management, may appear in the mesh of the net. Such advertisements may not prevent the player from seeing the ball through the mesh with the exception of its part outside the table side. The overall height shall not be more than 70mm and it must be separated from the tape by at least 20mm. It is recommended that characters or symbols should have no line larger than 20mm. It shall not be glossy, and the application procedure of the advertisement may not affect the properties of the fabric. Taking into account the above mentioned specifications for non-permanent markings and the material used for the net, the supplier of the net shall indicate the composition of his mesh and submit a description of how advertisements can be added without changing the structure and features of the mesh.

## Additional devices attached to the net assembly

In some competitions it may be desirable to attach objects such as microphones and video cameras to the net or post. This shall not be done without prior advice of the Equipment Committee and agreement of the Referee and the Competition Manager.

These devices must be small and, in the absence of legislation on this matter, a maximum dimension of 30mm for anything attached to the post is suggested. Something attached to the mesh must be much smaller than this, and should not affect the tension, shape or height. Nothing attached to either the post or the mesh shall project above the tape. These devices must be dark, matt and as inconspicuous as possible, and not emit light. They should be wireless; if not, their attached wires should also be dark and matt.

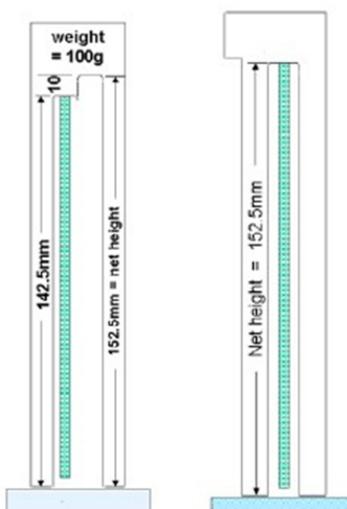
## General appearance

The general appearance of the net assembly must also be considered in addition to its actual function. There should be a sharp demarcation between the tape and the mesh and the mesh should not look too delicate. The posts should look firm, not flimsy, and they must not have sharp edges or other parts that may cause injury to users. The whole assembly must look sturdy and neat.

## Tension and height adjustment

Since the mesh is loose its **tension** will not have to be adjusted. The cord, however, must be tightened after the assembly is set up; the simplest way of doing this is to stretch it manually and loop it round a projection. Usually, however, the cord is attached to a mechanical device at one end, which either pulls it down or winds it round an axle. Any such device or projection should not extend more than 7mm from the upright post. It is important to ensure that the tension in the cord is higher than that in the mesh. In approving nets, attention is paid to the ease of adjusting tension.

The top of the net should be 152.5mm above the playing surface. Since the table can wear at the points of attachment most net manufacturers provide a means of **height** adjustment: the top of the post, which has some means such as an indentation to prevent the cord from slipping off, can be raised or lowered. This adjustment is normally made by means of a screw under the upright post, but other methods are possible. Whatever device is selected, it must not extend more than 7mm beyond the outside limit of the horizontal part of the net post. In approving net assemblies, attention is given to the ease of making this adjustment. The pressure of finger and thumb should be enough, and no tool shall be needed.



The tension of the net cord may be checked in the middle of the table either by fingers, or much better by a 100g **heavy tension gauge**. The 142.5mm high part of the gauge should hang on the net; the tension is good if the bottom of the gauge comes next to the tabletop surface, but without touching it. Otherwise the devices to adjust the net tension must be operated.

The height of the net shall be checked about 30cm from the upright posts and in the middle of the table: it shall reach the correct height. The height should preferably be adjusted with the normal **light net gauge** that does not depress the net: the bottom of the freely and vertically hanging gauge should just touch the tabletop. Otherwise the devices to adjust the net height have to be operated until the 152.5mm are reached everywhere.

**Warnings:**

- First adjust tension, then height. Adjusting a low tension normally increases the height of the net.
- After the decrease of the height, the tension may be too loose; in that case the tension may be checked again.
- It happens that net meshes are stiffer than allowed: in that case the tension gauge does not work correctly; the cord tension has to be checked and adjusted without a gauge (with fingers!).
- The heavy gauge can also be used for adjusting the height, but then it must be kept in mind that it always will push down the net, which will rise after taking off the gauge. Adjusting the height of a net with this heavy device requires a special care.

***End of T2***