

JTED

CONSTRUCTION
OF A JUVENILE AND
TRASH EXCLUDER DEVICE
USING THE SEMI-CURVED
RIGID SORTING GRID



SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER
TRAINING DEPARTMENT **SEAFDEC/TD**

Prepared under FAO/GEF Project



SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER
TRAINING DEPARTMENT

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- 2) To conduct research and development in fishing gear technology, fishing ground surveys, post-harvest technology and aquaculture, to examine problems related to the handling of fish at sea and quality control, and to undertake studies on the fisheries resources in the region; and
- 3) To arrange for the transfer of technology to the countries in the region and to make available the printed and non-printed media, which include the publication of statistical bulletins for the exchange and dissemination related to fisheries and aquaculture development.

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Construction of Juvenile and Trash Excluder Device (JTED)

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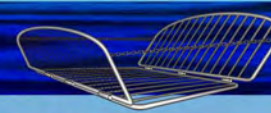
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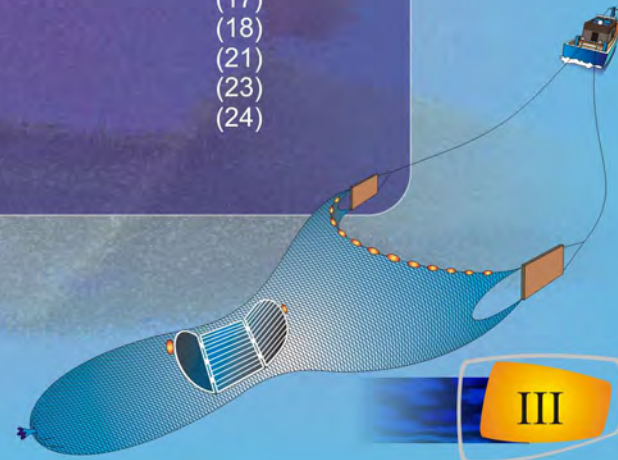
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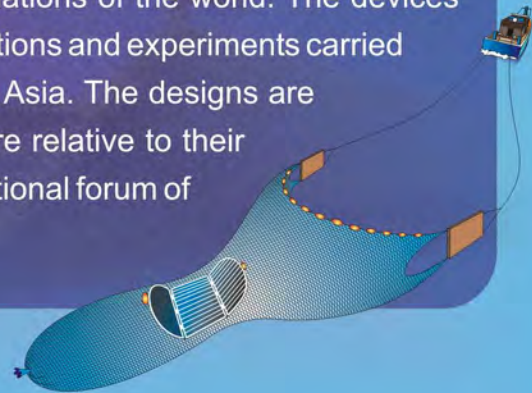


Preface

This small booklet marks another step toward achieving the SEAFDEC objectives of responsible fishing practices and technologies. It is intended to enhance the awareness of fishers, fishery managers and to some extent the general public of the need to bring fisheries back from the total decline they are currently approaching and allows the construction of suitable devices from the simple pictures included.

The designs featured in this small manual are such that when the devices are used the small and immature fish of targeted species can be allowed to escape to grow to physical maturity and to be of enhanced value for later consumption thus feeding the nations of the world. The devices depicted in these pages have been the subjects of many demonstrations and experiments carried out in the varying sea and fishing ground conditions in Southeast Asia. The designs are varied according to the needs and duties of the fishermen and are relative to their targets. This activity leads toward the endeavor of the major international forum of December 2001,

'Fish for the People'.



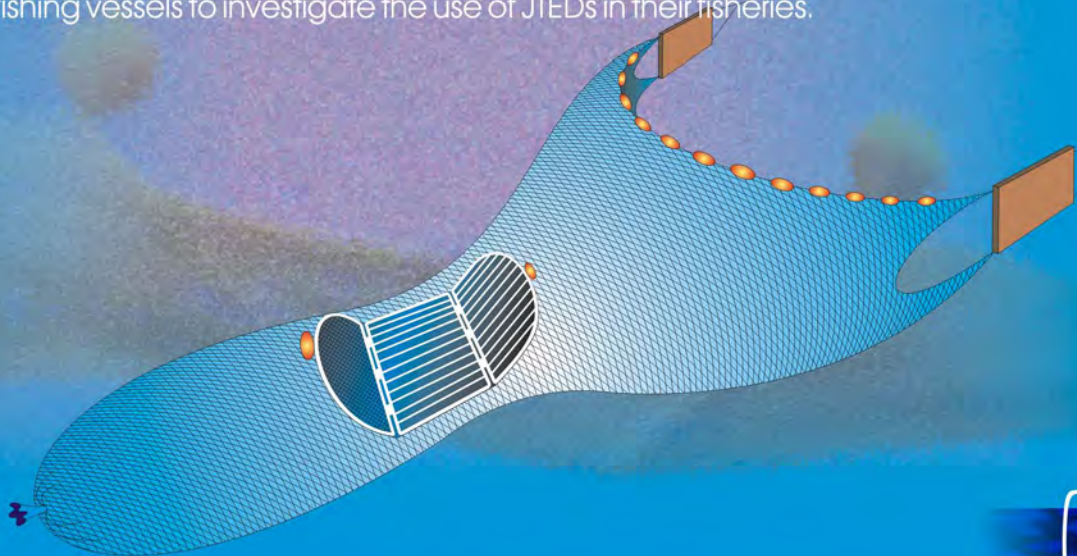


Introduction

This document outlines the construction of a Juvenile and Trash Excluder Device of the Semi-Curved Rigid Sorting Grid design.

Juvenile and Trash Excluder Devices, commonly known as JTEDs, are devices that aim to reduce the capture of juvenile and unwanted fish. JTEDs are generally placed in the codend area of a trawl net.

The authors would like to encourage the owners and operators of trawl fishing vessels to investigate the use of JTEDs in their fisheries.



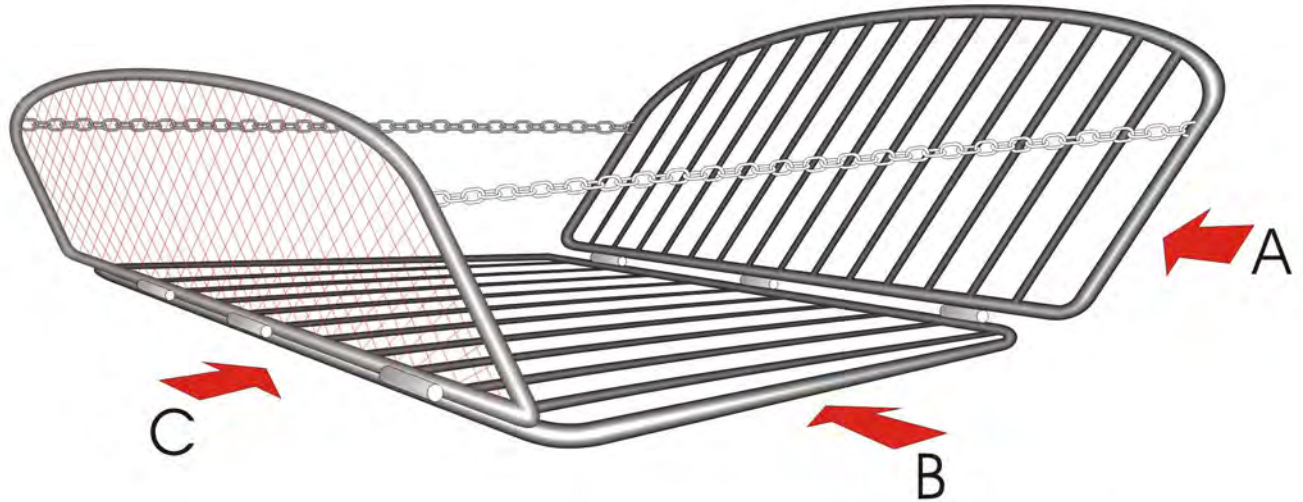
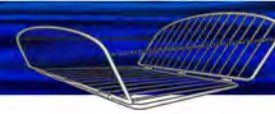


Figure 1: Side view of the Semi-Curved Rigid Sorting Grid JTED.



1. The Semi-Curved Rigid Sorting Grid JTED

This JTED consists of three iron frames, which are connected by hinges. Two chains are attached to the end frames to give the JTED shape.

The general characteristics of the frames of the JTED are:

- A. **Front part.** This part consists of an iron frame filled with vertical iron bars.
- B. **Base.** Similar construction to A.
- C. **Back part.** An iron frame similar to the front part, although filled with mesh netting instead of iron bars.

Figures 1 and 2 provide a side and top view of this JTED type.

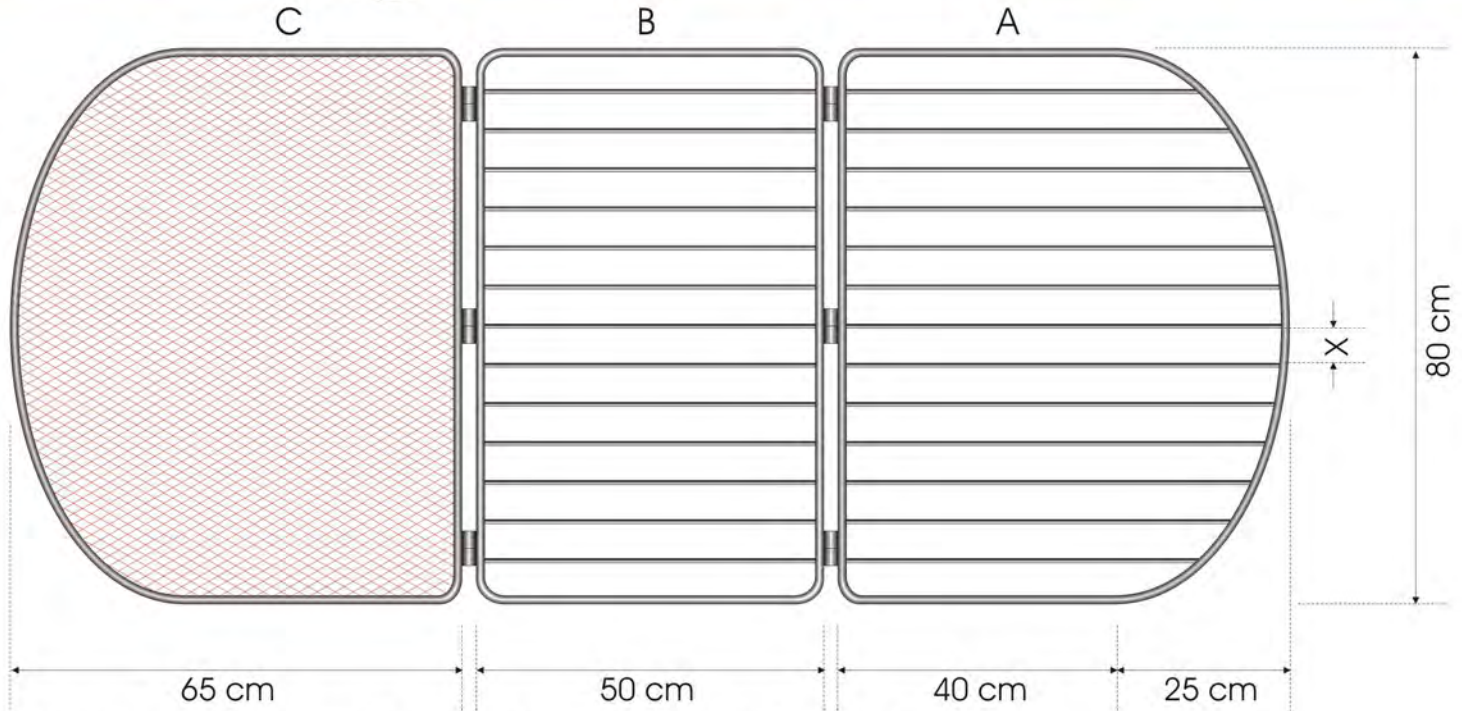


Figure 2: Top view of the Semi-Curved Rigid Sorting Grid JTED.

("X" being the distance between the iron bars. The distance between the bars can be modified to suit the needs of the fishery and the desired selectivity. A variety of bar spacings from 10mm to 40mm have been trialed in the Southeast Asian region.)



2. Construction Steps for the Semi-Curved Rigid Sorting Grid JTED

2.1. Construct the frames and bars for A, B and C

2.1.1 Make the frames A and C

Use an iron bar with a length of 260cm and 12mm diameter. Bend the iron bar into the shape shown in figure 3. Repeat this process so that the frames for parts A and C are made.

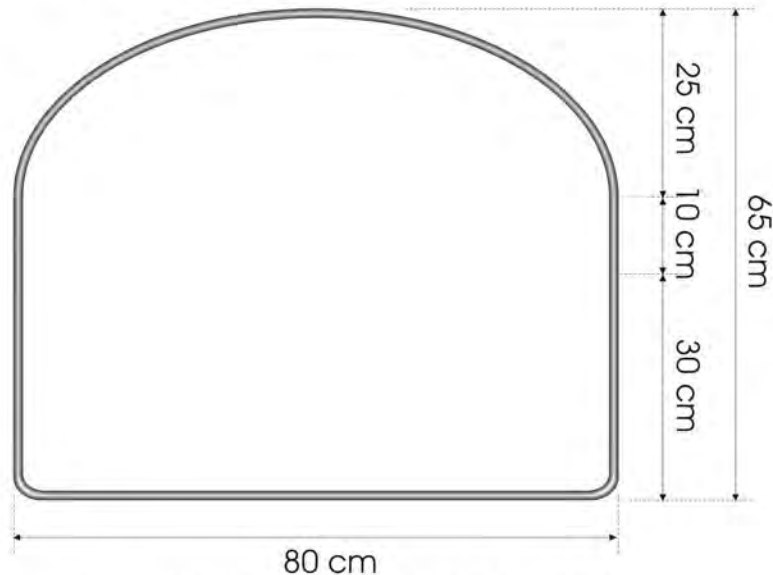


Figure 3: Frame design for parts A and C.

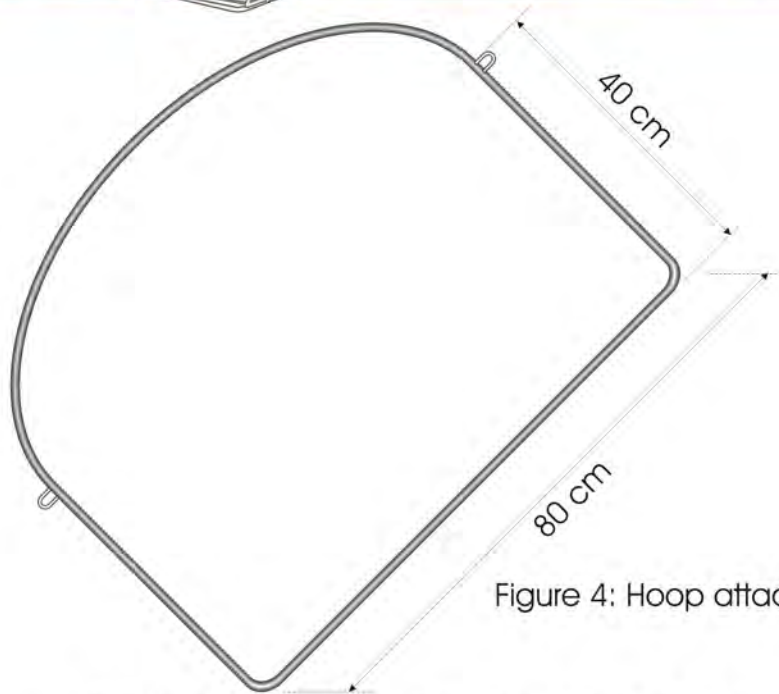


Figure 4: Hoop attachment for parts A and C.

2.1.2 Make and attach chain hoops to the front part (A) and back part (C)

In this JTED type, two chains connect the front part (A) and back part (C). Curved hoops must be made and attached to parts A and C for the purpose of chain attachment. Each curved hoop can be made from a 10cm length of 8mm diameter iron bar. These hoops must be welded to the frames approximately 40cm from the base of the part (see Figure 4).

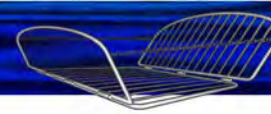


Figure 5: The base part of the Semi-Curved Rigid Sorting Grid JTED.

2.1.3 Making the base

Bend a 260cm length of 12mm diameter iron bar into a rectangular shape with the long sides of 80cm and the short sides of 50cm (see Figure 5). Once the rectangular shape is made weld the ends together.

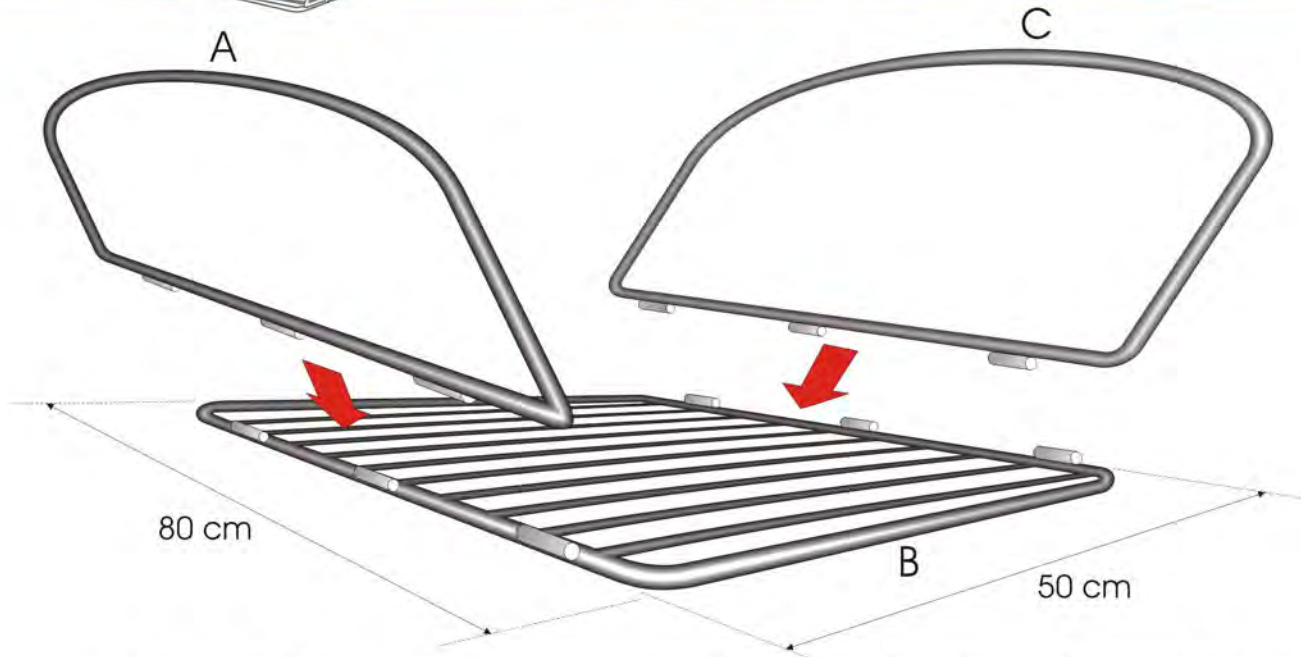


Figure 6: Connecting the front and back parts (Part A and C) to the base (B).

2.1.4 Connecting the base (B) to the front part (A) and back part (C)

Six hinges are needed to connect parts A, B and C. The hinges should be connected to the long sides of the base (B) and the bases of the front part (A) and back part (C). The spacing between these hinges should be equal (see figure 6).

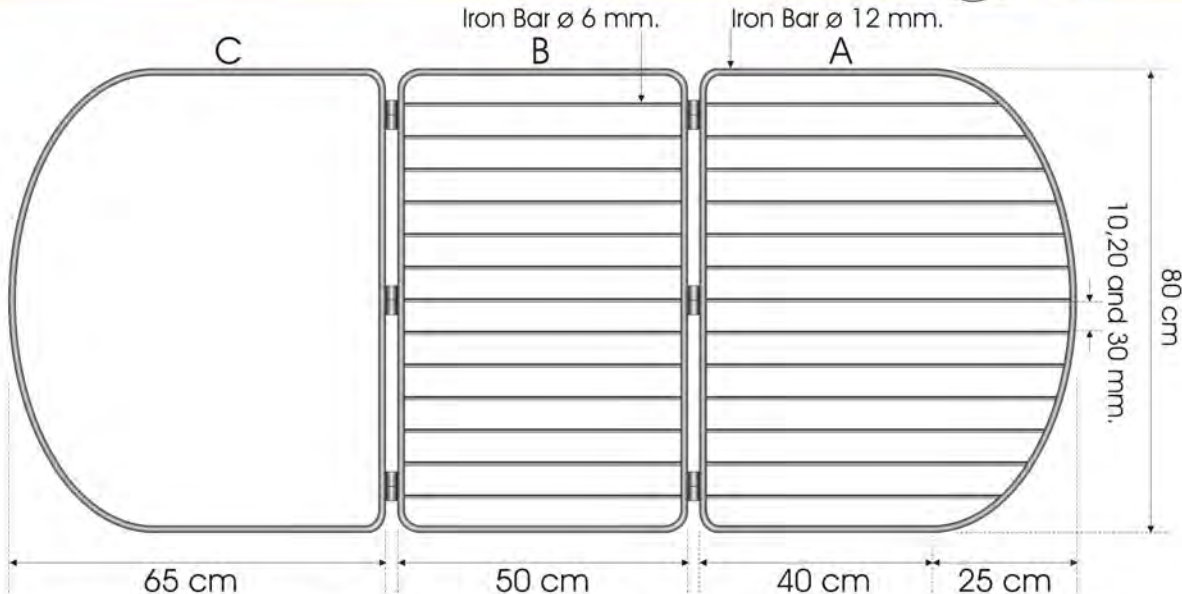
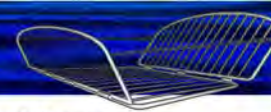


Figure 7: Top view the Semi-Curved Rigid Sorting Grid JTED with the front part (A) and the base (B) filled with bars.

2.1.5 Making the iron bars

Both the front part (A) and the base (B) have iron bars inserted into them. Iron rod of 6 mm diameter is used. The length of the rods will vary depending on the location of each bar. The spacing of the bars depends on the desired selectivity and the needs of the fishery. The iron bars need to be welded into the frames (see figure 7).



PE380D/12
mesh size 15 mm.

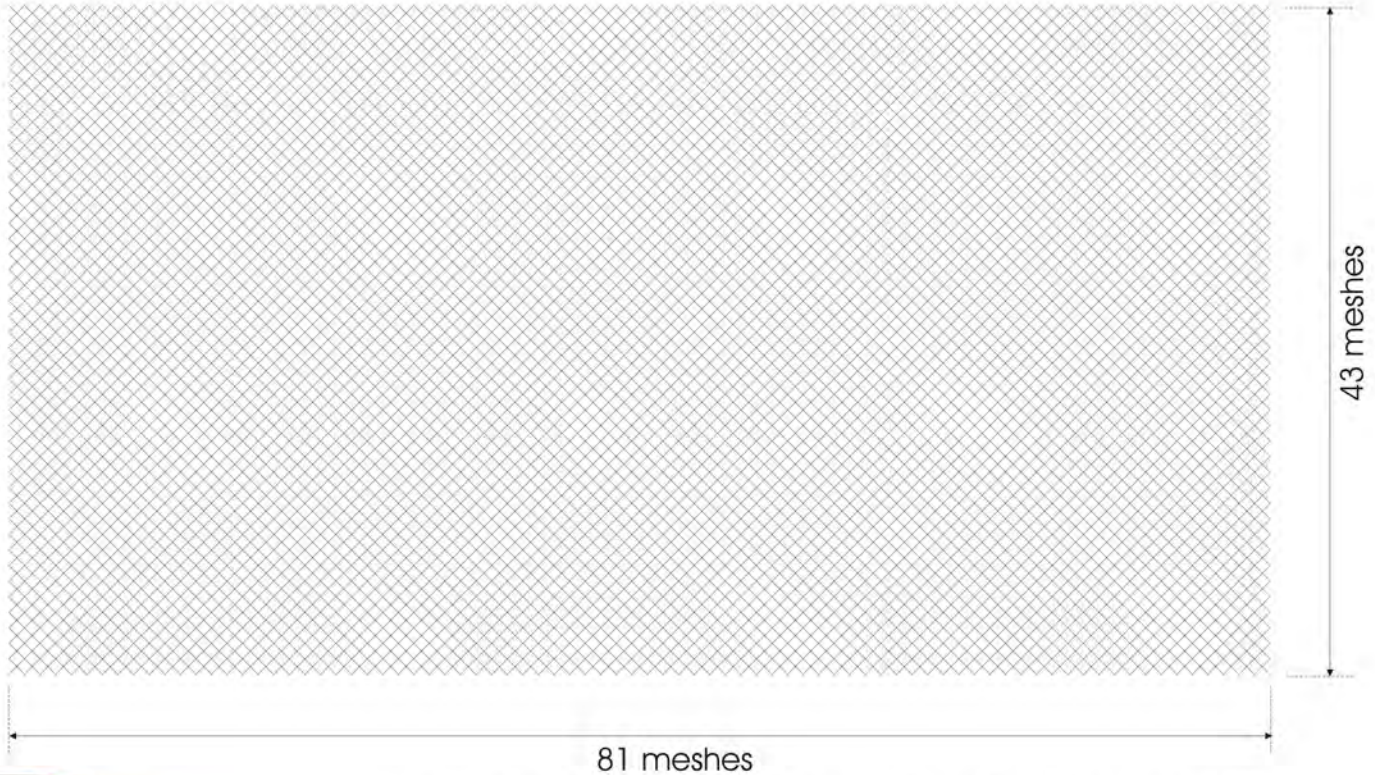
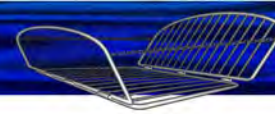


Figure 8: The net material requirements for the back part (C).



Important construction notes

1. Construct the sections on a flat surface to avoid twisting in the iron bars.
2. Make sure all rough or sharp surfaces are filed back to avoid injury and damage to the net.
3. Prime metal and apply marine grade paint to avoid rusting

2.2 Attaching the net to back part (C)

2.2.1 Cut a primary piece of netting material

The netting should be of the PE380D/12 type with a mesh size of 15mm. The width of the netting should be 43 meshes and the length 81 meshes (see figure 8).

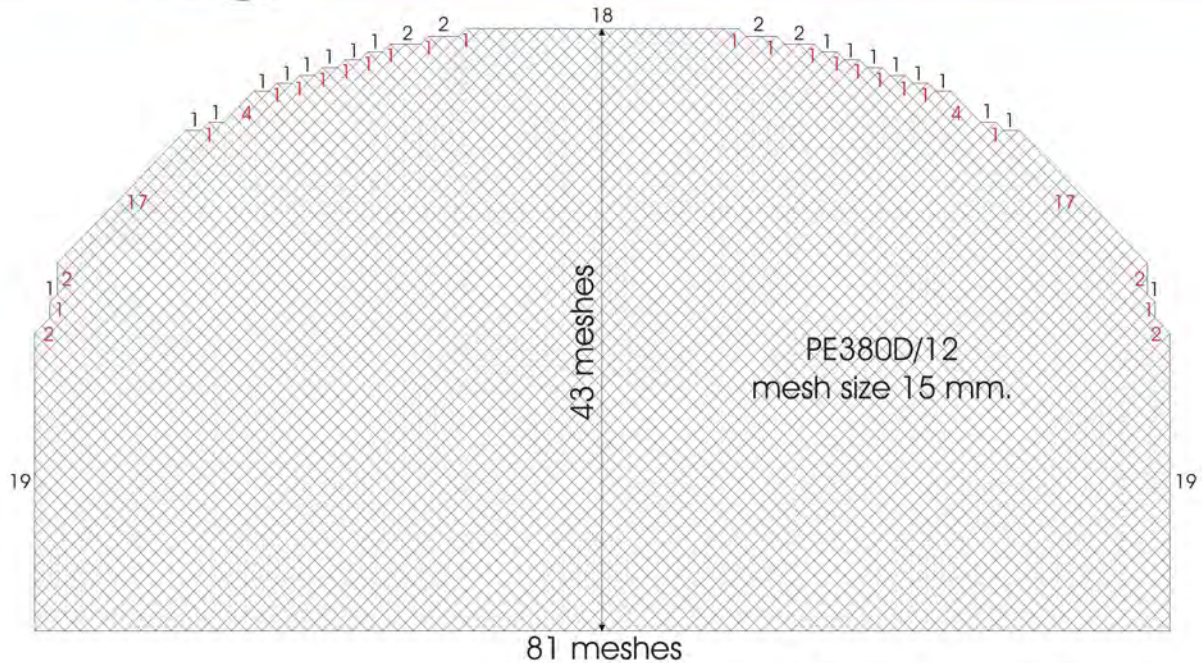


Figure 9: Scale for cutting the net.

2.2.2 Shape the netting material

To shape the netting for the back part (C), cut the primary piece of netting material according to the scale used in figure 9.

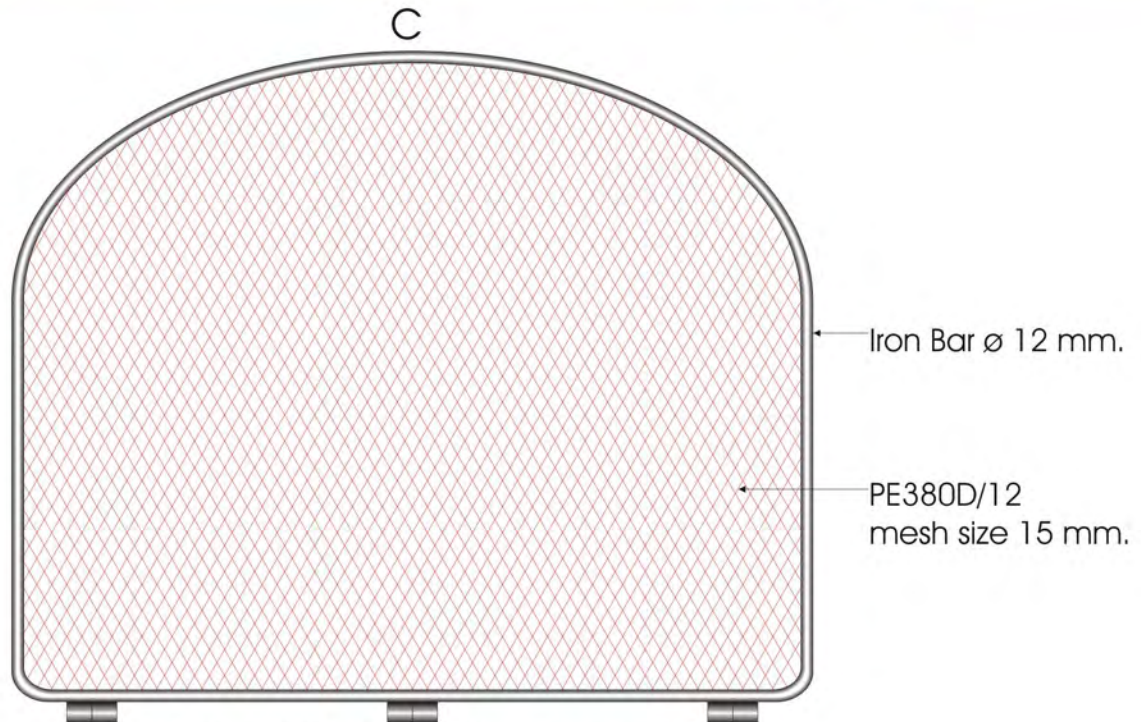


Figure 10: The back part (C) with netting attached.

2.2.3 Attach the netting to the back part (C)

Hand sew the netting to the frame of the back part (C) (see figure 10).

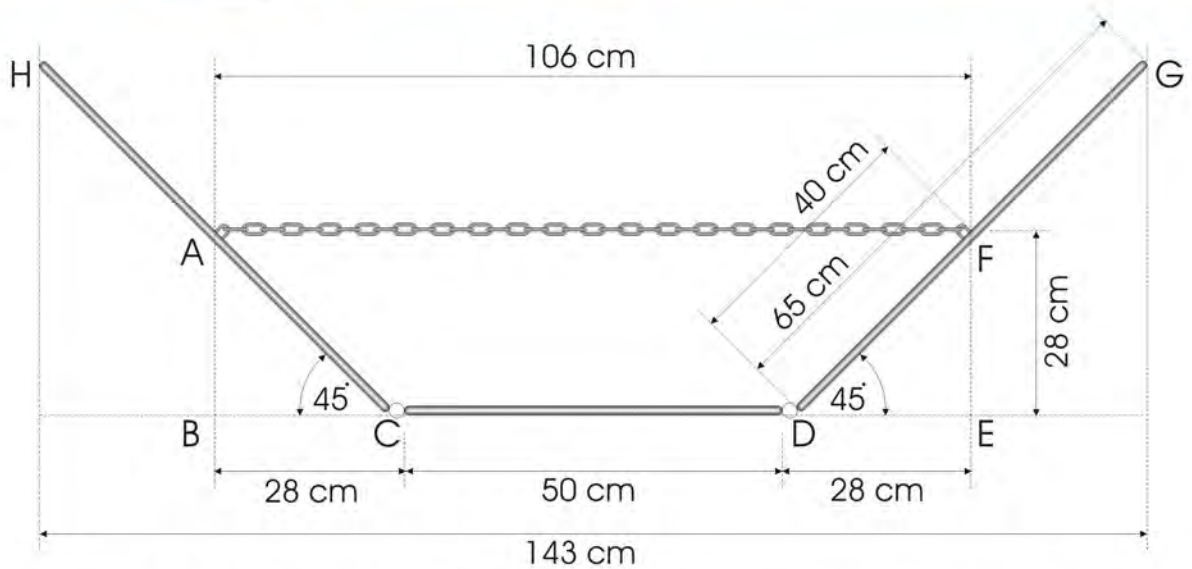


Figure 11: Side view of the completed Semi-Curved Rigid Sorting Grid JTED.

2.3 Connect the chains to the front and back parts

Attach two 106 cm lengths of chain to the front part (A) and back part (C). This will result in these parts being at an angle of 45° (see figure 11 and 12).

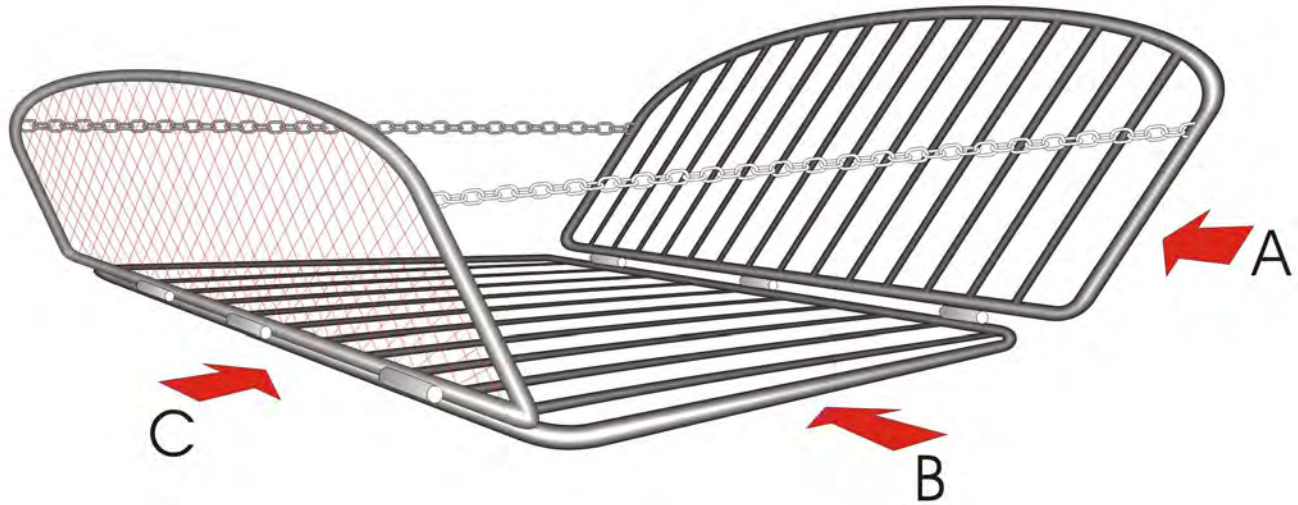
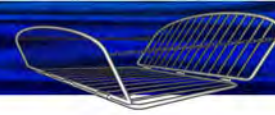
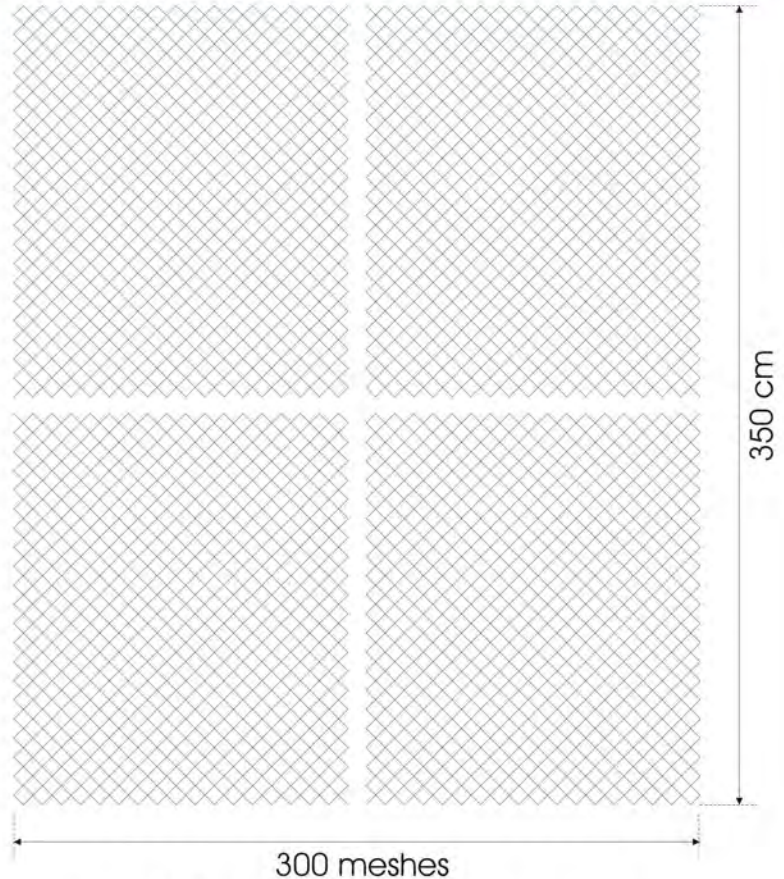


Figure 12: The completed Semi-Curved Rigid Sorting Grid JTED.



PE380D/15 mesh size 25 mm.

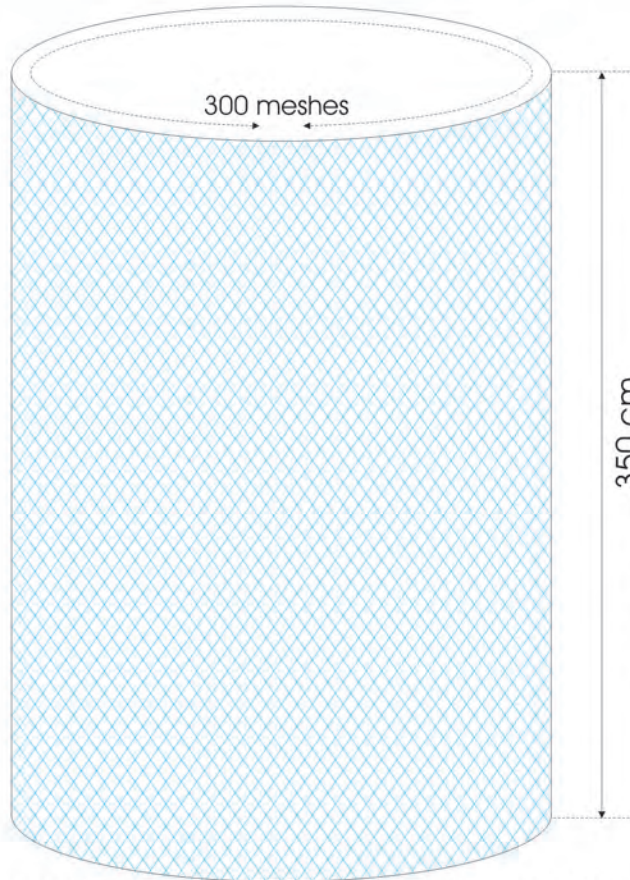
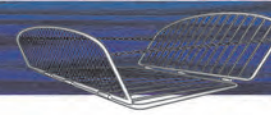


3. Extension Net Preparation

3.1 Cut a primary piece of netting material

The extension net is made from PE 380D/15 netting material with a mesh size of 25mm. The length of the netting is 350cm and 300 meshes wide.

Figure 13: Extension net length and width.



3.1.1 Form the extension net section

Sew the long sides of the netting together so that the circumference is 300 meshes (Figure 14).

3.2 Construct and attach hoops

Two hoops must be constructed and attached to each end of the extension net to form a cylindrical shaped section. Form a 250cm length of 12mm diameter iron rod into circular hoops with a diameter of 80cm. Hand sew the hoops to each end of the extension net.

PE380D/15
mesh size 25 mm.

Figure 14: Side view of the extension net.

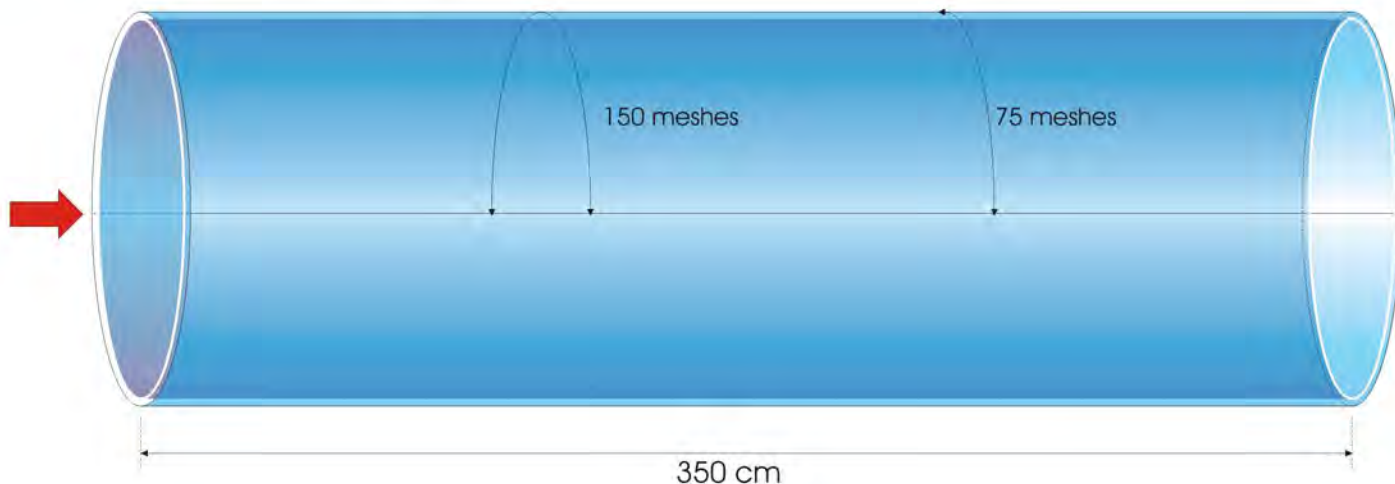
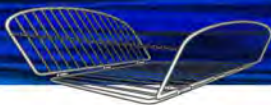


Figure 15: Location of marks across the stitching line of extension net (side view).

3.3 Prepare release hole

3.3.1 Make marks across the stitching line

From the stitching line, count 150 meshes across the stitching line. Make a mark with a colored pen. From the marked point, count another 75 meshes along the stitching line and make another mark with a colored pen (see figure 15).

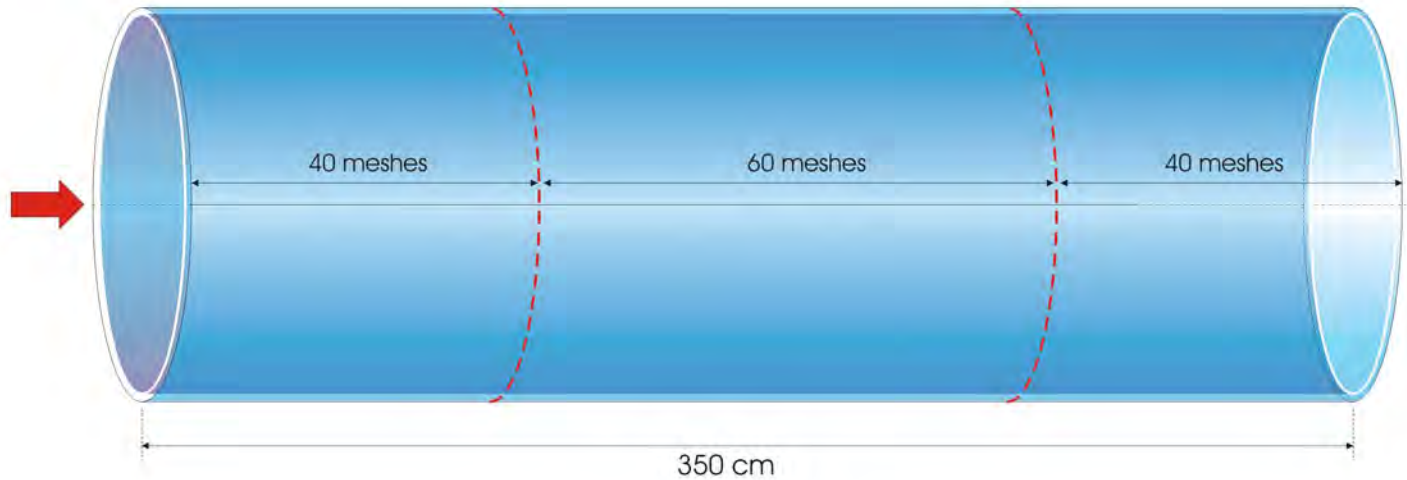
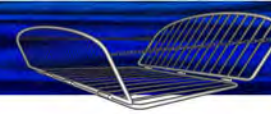


Figure 16: Location of marks along the stitching line (side view).

3.3.2 Make marks along the stitching line

From the base of the hoop that will be closest to the boat when trawling, count forty meshing along the stitching line and mark the 40th mesh with a colored pen. From this mark, count another 60 meshes and mark the 100th mesh from the hoop with a color pen. From the 100th mesh, count 40 meshes and mark the 140th mesh with a colored pen (see Figure 16).



4. Attach the JTED to the extension net

Sew the JTED to the opening of the net. The JTED attachment of the JTED must not be too tight or loose. It is believed that this affects the releasing ability of the JTED. Figures 18 and 19 represent the JTED after having been attached to the extension net.

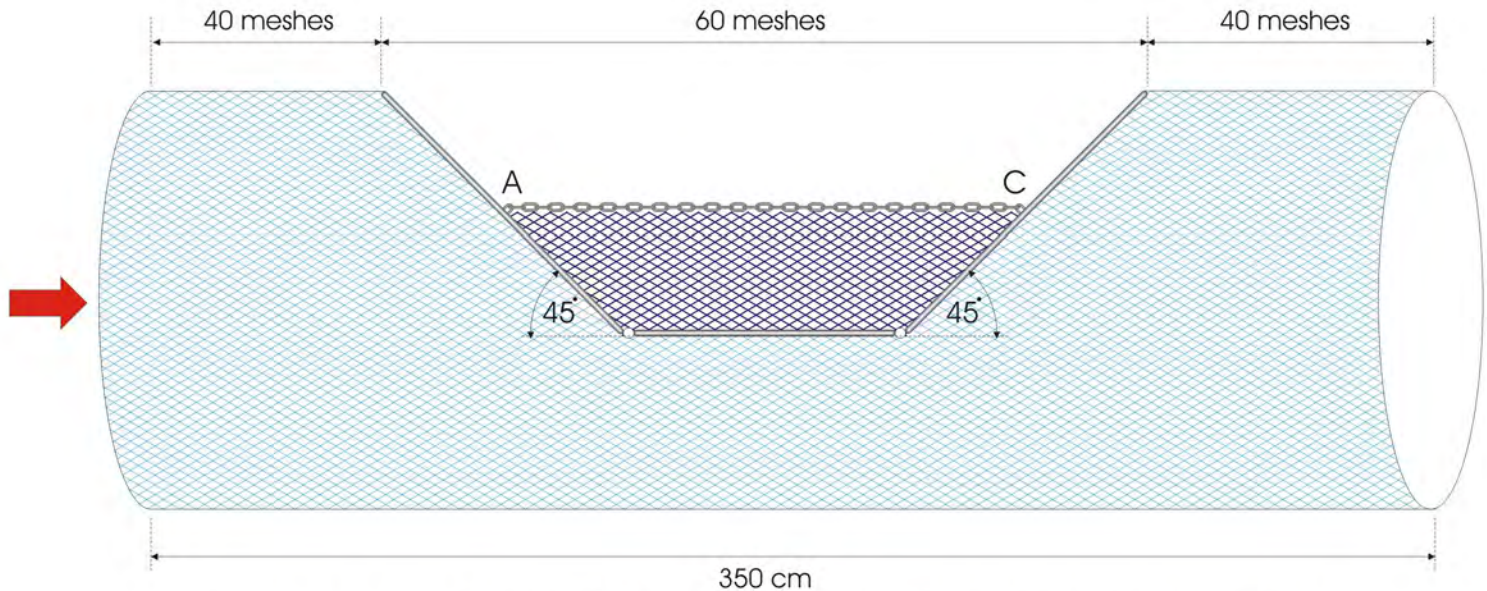


Figure 18: The Semi-Curved Rigid Sorting Grid JTED attached to the extension net.

The chains will sit tort near the opening of the net.

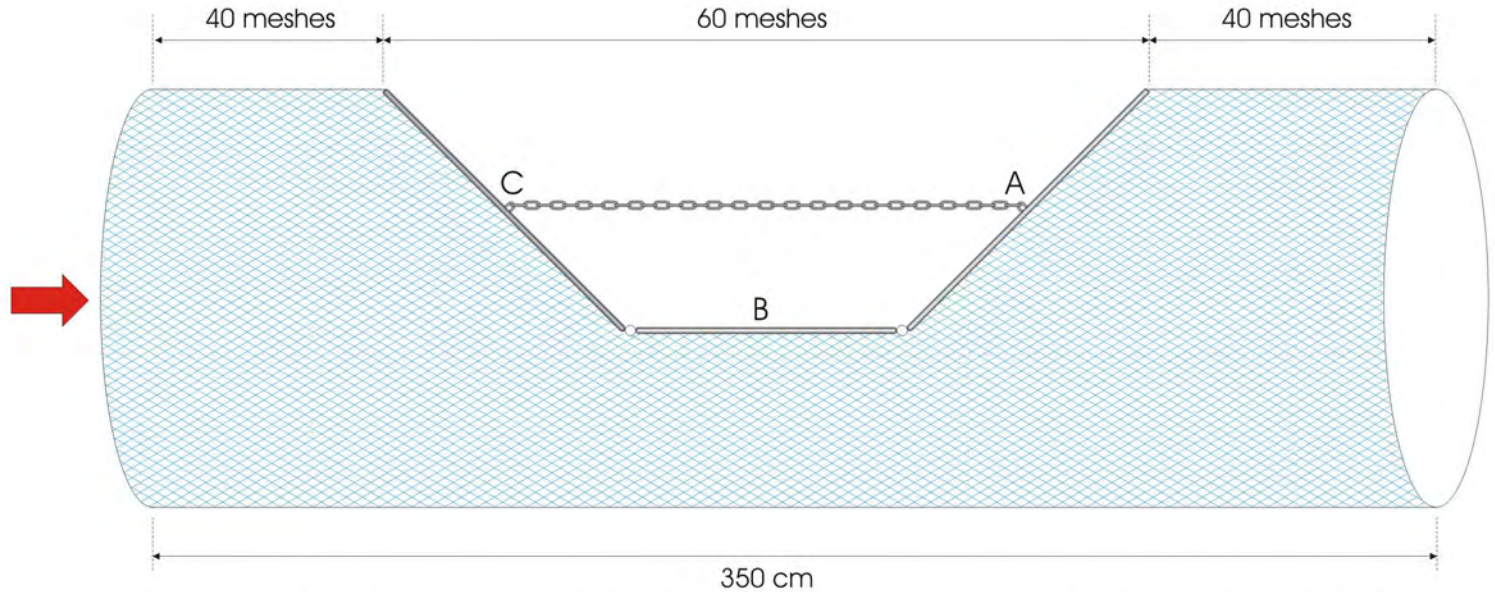
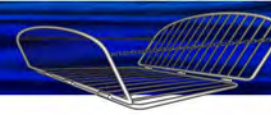


Figure 19: The Semi-Curved Rigid Sorting Grid JTED ready to be attached to the trawl.



4.1 Attach PVC buoys

The PVC buoys need to be attached to the JTED for floatation and stabilization (see figure 20).



Figure 20: Buoys attached to the completed Semi-Curved Rigid Sorting Grid JTED.



5. Install the JTED set into the cod-end of trawl net

Step 1: From the end of the cod-end, measure 10 meter length to the front of the trawl net and mark the 10th meter along the cylindrical shape, then cut it along the cylindrical. This will separate the trawl net into 2 parts.

Step 2: Remove the metal hoops from the JTED set.

Step 3: Connect the JTED set into the trawl net by hand sewing along both parts of the stitching line

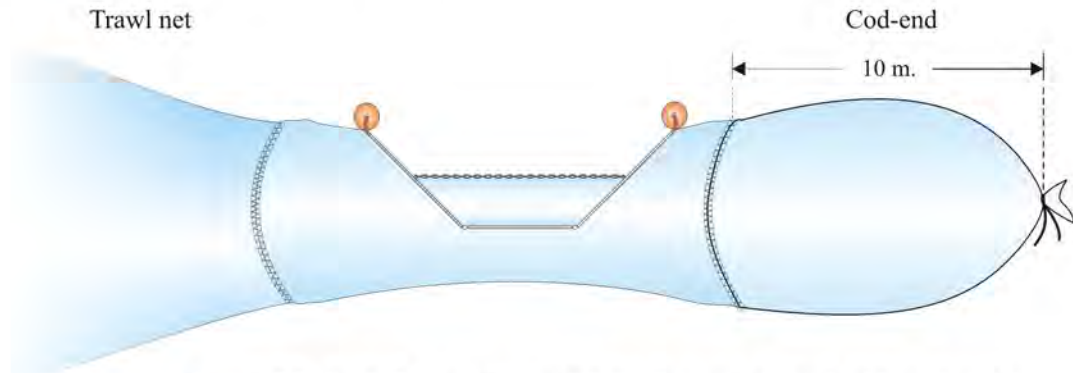


Figure 21. Install the JTED set into the cod-end of trawl net



The Semi-Curved Rigid Sorting Grid JTED

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