



GENERAL FISHERIES COMMISSION
FOR THE MEDITERRANEAN
COMMISSION GÉNÉRALE DES PÊCHES
POUR LA MÉDITERRANÉE



SCIENTIFIC ADVISORY COMMITTEE (SAC)

Fifteenth Session

FAO Headquarters, Rome, Italy, 8-11 April 2013

**Report of the Workshop on Mediterranean gears, fishing technology and selectivity – in collaboration with CopeMed
Tangier, Morocco, 26–30 November 2012**

INTRODUCTION

The Mediterranean workshop on Mediterranean gears, fishing technology and selectivity was organized in Tangier by the FAO project CopeMed II, in coordination with the GFCM Secretariat and the SCMEE and was run under the direction of the GFCM TECHNOMED network coordinator Mr. Jacques Sacchi, supported by the CopeMed II Coordinator. Two more professors Mr. Ignacio Soler and Mr. Santiago Salom formed with Mr. Sacchi the teachers' team¹ in charge of the theoretical and practical sessions. The workshop was proposed by the SCMEE during the annual meeting of the Sub-Committees (Roma, Italy, 23–26 January 2012) and adopted by the GFCM that agreed that the contents and the organisation should be agree between CopeMed II and the GFCM Secretariat.

The SCMEE/SAC TECHNOMED network started its activities in 2006 to assist the SAC/GFCM in favouring the exchange of information between Mediterranean scientists involved in fishing gears technology research. A total of 66 scientists from 12 countries have been involved in this task before the workshop in Tangier, according the SCMEE. Several workshops have been held until now dealing mainly with the improvement of selectivity of bottom trawling in the region and the elaboration of databases on trawls and static gears selectivity (GFCM:SAC14/2012/Inf.5).

The workshop in Tangier was attended by 22 participants from 10 Mediterranean countries from the different subregions, thanks to the way promoted by the FAO Mediterranean projects to improve the capacity of the countries and reinforce the experts networking.

¹ Jacques Sacchi, Scientist, Chair of the TECHNOMED Network. General Fisheries Commission for the Mediterranean (SAC-SCMEE)

Ignacio Soler Martinez. Fishing Captain and Professor of Fishing Technology. Instituto Politecnico Marítimo-Pesquero del Mediterráneo. Alicante (Spain)

Santiago Salom, Fishing Technologist and Gears builder. Suministros y Asesoramiento Pesquero (SUMASPE), Castellón (Spain)

OPENING, ARRANGEMENT OF THE MEETING AND ADOPTION OF THE AGENDA

Mr. Juan Antonio Camiñas, Coordinator of CopeMed welcomed the participants and thanked the other FAO Mediterranean projects AdriaMed, MedSudMed and EastMed for supporting the participating experts to come to Morocco to the workshop. He thanked particularly the GFCM and its Secretariat for the confidence in CopeMed to organize the workshop. He also thanked the INRH and particularly the Director of the Centre in Tangier and his team for the local support to the organization of the workshop. The Coordinator recalled that the Coordination Committee of CopeMed II (Malaga, 2-4 May 2012) supported the participation of CopeMed in the organization of this training workshop with the GFCM and that the thirty-sixth session of the Commission (Marrakech, 14–19 May 2012) adopted the proposal of the SCMEE to co-organize with the CopeMed Project a meeting of the Working Group on Selectivity and fishing technology to incorporate new young experts from the Western and Central Mediterranean, as a first step to improve TECHNOMED network and particularly its objectives of strengthening the capacity of young national experts of CopeMed II countries and the other FAO Mediterranean projects in the field of selectivity and fishing gears technology.

After and introduction of the teachers Mr. Jacques Sacchi, coordinator of TECHNOMED network, Mr. Ignacio Soler (technology expert) and Mr. Santiago Salom (gears builder and technologist), the program of work was introduced and adopted.

INTRODUCTORY SPEECHES

As a starting point of the workshop, the *Origin and role of the Mediterranean fishing technologists network GFCM TECHNOMED* were recalled. This network was initiated under the recommendation of GFCM (Istanbul, 2006) to support the SAC of GFCM on to assist SAC in its recommendations on fisheries management dealing with fishing technology aspects and to facilitate the cooperation between Mediterranean scientists involved in fishing technology studies. It is also recalled the GFCM recommendation to bring a strong effort for improvement the selectivity of the Mediterranean trawl and to provide reliable and update advices to the fishing industry which makes possible the implementation of technical measures.

The *Status of fisheries exploitation in Mediterranean sea* was presented on the basis of recent GFCM evaluation of demersal resources (Istanbul 2010) and of pelagic resources (Mazara del Vallo, 2010) recalling that 91% of the stocks assessed are overexploited or fully exploited and that Mediterranean demersal fisheries are mostly based on juvenile fish leading to a growth exploitation. The spawning biomass for some species is also a subject of concern. Furthermore, the fishing activity affects also vulnerable species as marine mammals, seabirds, sea turtles and elasmobranchs and has a significant impact on substrates and marine habitats. This situation justifies fully the GFCM Recommendation on the improvement of selectivity in Mediterranean fisheries and the reduction of the impacts on the marine environment.

The various *Components of Mediterranean fishing activities* were reviewed making the distinction between semi-industrial and small-scale fishing fleets with some quick presentation on their evolutions during the 20 last years. In this presentation, the different fishing gears categories were presented and commented according the FAO classification of fishing gears.

BRIEF DESCRIPTION OF THE MAIN FISHING TECHNIQUES USED IN THE MEDITERRANEAN SEA

This session was dedicated to the description of the main Mediterranean fishing gear with special attention on the terminology in use, their conception, their rigging and their various types which is possible to encounter in Mediterranean Sea region. A description of fishing vessels of fishing operations was also given with a brief inventory of the fishing material.

Trawls and Purse seines

After a first movie on trawl and purse seine operation, a presentation on technical characteristics of trawl design was done with a particular attention on the technical requirements in terms of conception and use. Wide information about new technologies, electronic equipment and deck layout was given.

Through practical exercises, it was demonstrated how to calculate the different tapes of net panels which are used for building a trawl and how to calculate the net surface of the different pieces of a trawl. It was shown how it is possible to calculate the pull power of fishing vessel and its relation with the trawling speed. In the same way, it was explained how to fit the trawl rigging (warps, doors, combination ropes and net) in accordance with trawl speed.

Purse seine is the 2nd most important fishing mobile gear used in Mediterranean Sea. The way of how to read a purse seine drawing was done with a detailed review of the different parts and material used for their conception. A brief review of the various types which exist in Mediterranean fisheries was made.

Gillnet and trammels

Presentations started by a detailed description of the different components of the different gears as well as how they are built. Their main technical characteristics were given showing and also their role in the capture process.

Hook and line

A description of the basic concept of a hook and line fishing device was served as introduction for describing the various types used in longlining and hook and line fishing. The role of bait was pointed out as essential factor for selectivity and efficiency. The presentation underlined also the effect of shooting speed and hook space on hook depth and consequently on selectivity.

Trap and pots

The presentation described their different types and shapes and their uses fitted for various species. They were in the past of larger importance for small scale fisheries but according their low impact on the environment and the high quality of their catch their use presents today a growing interest. Nevertheless the complexity of their catch modes is mainly based on target prey behavior and their low efficiency can contribute to limit their development.

Finally, a brief overview of other fishing gears used in Mediterranean waters, such as dredges and trap nets closed the session on Mediterranean fishing gears.

FISHING TECHNIQUE AND FISHING MANAGEMENT

The presentation of fishing operations analysis showed that any fishing act is an answer to market demand which is limited by several external and internal constraints. This answer results in a succession of phases of which fishing operations are only the most visible part.

The analysis with a tool as the *Functional Analysis System Technique* allows identifying the most important functions of this production system and the needed means. The hierarchization of these functions can help in the characterization of the fishing capacity and the fishing effort.

The technology progress which was benefited to Mediterranean fisheries has strongly increased their fishing efficiency and their fishing capacity; this effect which is called **Technical creeping** leads indubitably on a subsequent increase of fishing effort and fishing mortality and consequently should be taken into account in fisheries management. The French tuna purse seining and Gulf of Lyons trawling were given as examples. A recall of terminology in use for the different concepts was made as well as methodology for assessing the Effective Fishing Effort. Finally, a review of different management tools was made underlying the interest to go deeper in a detailed description of fishing operation and their technical and strategic characteristics.

The **Fuel consumption issue** was discussed through the presentation of the project: “*Improving energy efficiency onboard of fishing vessel MAGU*” which was developed in Santa Pola (near Alicante, Spain) last November. The presentation of the results showed the possibilities of saving fuel by the improvement of the overall trawl rigging and particularly the doors and net as in the case study the vessel can save today about 25/30% of energy consumption in fishing operations.

SELECTIVITY

After a recall of gillnet and trammel catch process, the static net selectivity was described and discussed, with its different assumptions describing notably the technical selectivity parameters and their effects on the selectivity curve modeling. Technical solutions for improving the selectivity of these gears were also proposed.

A video on SELMED, an UE Project carried out in 1990 on the **gillnet** selectivity in 3 European countries with the participation of NCMR, ICRAM, CETEMAR and IFREMER gave an example of a selectivity study for hake gillnet fishery.

For **trawl fishing**, the selectivity was presented as the result of a capture process which retains in the codend a proportion of fishes that encounters the trawl. Differences with gillnetting were discussed and on the reliability of the different assumptions which are made for the of selectivity function modeling. Various technical solutions were presented and discussed in terms of advantages and inconvenient.

Several experimentations on trawl selectivity were carried out in the Catalan and Balearic Sea. The presentation describes the trials of different selectivity devices as square mesh codend and selective grids and the use cover codend or trouser codend methods. A movie on underwater observation showed the effects of a separator panel on the escapement of cod in a trawl codend.

The selectivity of **hook and line** gears depends primarily on the bait attractance and on the different characteristics of the hook and then of several other parameters as fish behavior and on the fishing conditions. The description of the catch process allowed different assumptions on the shape of the selectivity curve.

The **trap and pots** selectivity is based on several physical parameters of which the most important ones are the mesh size of the cover, the funnel characteristics and the presence of

escapement traps. Two examples of selectivity studies were presented with a description of their logistic curves.

Selectivity issue of **purse seining and dredge** were briefly presented recalling their different catch modes and the technical selectivity parameters.

Based on the ICES Manual of Methods measuring the selectivity of towed fishing gears (Wileman et al., 1996) a road map on **How to carry out a selectivity study** was done describing with examples on what it is necessary to do and to take account into the preparation and the achievement of selectivity survey for gillnet and for trawl.

PRACTICAL SESSION

Practical demonstration were done by Mr. Santiago Salom on mesh measurement and calculus of the mesh size with the new ICES gauge OMEGA was demonstrated and identification of different material used in gear conception.

Finally, a visit to the fishing port of Tangier was done and the different types of fishing activities and vessels were described and commented by Mr. Saïd Benchoucha (INRH - MOROCCO) and the course teachers.

CONCLUSION AND CLOSURE OF WORKSHOP

The agenda being achieved, the participants were requested to express their degree of satisfaction with the contents and teachers performances and the main issues that they wished to be develop in future training.

After the delivery of certificates of participation, the workshop unanimously thanked the hosting country (Morocco) and in particular the INRH for its hospitality and its support to the organization.

The Workshop was formally closed by the Coordinator of FAO CopeMed II Juan Antonio Camiñas on 30th November 2012.

PROGRAM OF WORK

1. Introduction

- The TECNOMED WG and the ATSELMED workshop on selectivity
- Status of fisheries exploitation in Mediterranean sea
- Typology of the main Mediterranean fleets
- Overview of various fishing gear used in Mediterranean sea

Tuesday 27 November

2. Description and conception of the main Mediterranean fishing gears

2.1. Trawls

- General characteristics of conception (material, draw reading, construction)
- Review of various types
- Vessel equipment for handling and controlling the fishing gear (winches, electronic material)
- General use and practices

2.2. Purse Seine

- General characteristics of conception (material, draw reading, construction)
- Review of various types
- Vessel equipment for handling and controlling the fishing gear (winches, electronic material)
- General use and practices

2.3. Static gears

- General characteristics of conception (material, draw reading, construction)
- Review of various types
- Vessel equipment for handling and controlling the fishing gear (winches, electronic material)
- General use and practices

Wednesday 28 November

3. Technical aspects of Fisheries management

- Description of the fishing operations (from land to land)
- Effects on fishing efficiency, fishing capacity and effort
- Identification of main technical parameters of fishing efficiency, fishing effort, fishing capacity and selectivity
- Selectivity parameters
- Effects on fuel consumption
- Regulations concerning fisheries control and safety; technical parameters to take into account
- Awareness of fisheries industry on ecosystem management (methods, involvement,)

Thursday 29 November

4. Selectivity Assessment

- Selectivity, methods of assessment and material

- Methodology of assessment, general concept
- Main parameters to consider according the different gears (gillnet , trawl)
- How to build the experimental process and the samplers and selectivity devices
- Assessment of socio-economical consequences (methodologies)
- How to prepare the data analysis
- Practical session: identification of material, draw reading and construction, gear conception, etc.

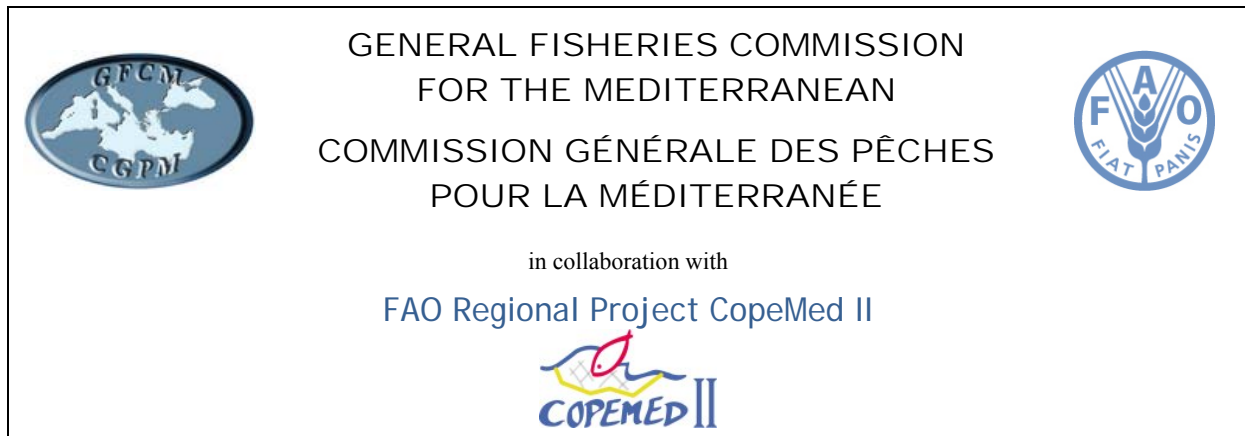
Friday 30 November

- 5. Practical session measuring mesh size and Visit to the fishing port**
- 6. Evaluation by the participants**

Annex 2

List of Participants

| | |
|-------------------------|------------|
| Marco Milensada | Italy |
| Mirko Djurovic | Montenegro |
| Olivera Markovic | Montenegro |
| Ahmed Hassan | Egypt |
| Alaa Elhaweet | Egypt |
| Mohamed Elgendy | Egypt |
| Angeliki Adamidou | Greece |
| George Lazarakis | Greece |
| Hussein Nassar | Lebanon |
| Adnan Ayaz | Turkey |
| Şakir Çınar | Turkey |
| Yasin M Tekala | Libya |
| Mohamed F Saad Alla | Libya |
| Ahmad K Elsnousi | Libya |
| Mohamed Mourad Ben Amor | Tunisia |
| Mourad Cherif | Tunisia |
| Hanane Kennouche | Algeria |
| Mohammed Bouaicha | Algeria |
| Akli Mohand Sahi | Algeria |
| Omar Kada | Morocco |
| Said Benchoucha | Morocco |
| Yassine Mouad | Morocco |



**Workshop on Mediterranean gears, fishing technology
and selectivity**
SAC-SCMEE Working Group on Selectivity and fishing technology

Tangier, Morocco, 26-30 November 2012

Date and Place

- 26-30 November 2012
- Hotel RIF & SPA
152 Avenue Mohamed VI
Tangier, Morocco

Local contact

El Mostafa Talbaoui
Institut National de Recherche Halieutique (INRH)
Centre régional de Tanger
E-mail: talbaoui2@yahoo.fr

Contact for coordination, technical and logistics matters

Coordination:

Pilar Hernández, Information Management Officer - GFCM Secretariat (pilar.hernandez@fao.org)
Juan Antonio Camiñas, Project Coordinator – CopeMed II (juanantonio.caminas@fao.org)

Technical matters:

Mr Juan A Camiñas
Mr Jacques Sacchi (jacques.sacchi@gmail.com)

Logistics:

Ms Abla Kadiri – CopeMed II (abla.kadiri@fao.org)

Ms Florence Dickens – GFCM Secretariat (florence.dickens@fao.org)

Lecturers:

Jacques Sacchi, Scientist and Chair of the TECHNOMED Network. General Fisheries Commission for the Mediterranean (SAC-SCMEE)

Ignacio Soler Martinez. Fishing Captain and Professor of Fishing technology. Instituto Politecnico Marítimo-Pesquero del Mediterráneo. Alicante (Spain)

Santiago Salom, Fishing Technologist and Gears builder. Suministros y Asesoramiento Pesquero (SUMASPE), Castellón (Spain)

Rationale

The thirty-sixth session of the General Fisheries Commission for the Mediterranean (Marrakech, 14-19 May 2012) adopted the proposal of the SCMEE to co-organize with the FAO-CopeMed Project a meeting of the Working Group on Selectivity and fishing technology.

The Coordination Committee of CopeMed (Malaga, 2-4 May 2012) also supported the participation of CopeMed in the organization of this training WS with the GFCM *to incorporate new young experts from the western and central Mediterranean, as a first step to improve TECHNOMED network.*

CopeMed II, in coordination with the GFCM and its SAC-SCMEE organises the WS in Tangier with the logistic support of the INRH (Morocco).

It is foreseen to have a maximum of 25 young experts from the Mediterranean area participating in this WS (designated by the national marine and fisheries research institutes participating in the FAO Projects and/or by the GFCM).

Registration

Please register your intention to participate by sending an e-mail to Ms Abla Kadiri (abla.kadiri@fao.org)

Annex 4

Distributed documentation

- COPEMED 2001. Workshop on Fishing Gear Selectivity. Kerkennah, Tunisia 9-11 October 2011. (http://www.faocopemed.org/old_copemed/reports/agenda/kerkennah.pdf)
- Coll, m., Bahamon, N., Sarda, F. & P. Suuromen. 2008. Report on ecosystem-based assessment of the effects of increasing trawl selectivity in the Mediterranean. WWF Spain. 68 pp.
- FAO/GFCM. Report of the GFCM Workshop on standardisation of Selectivity Methods applied to trawling in the Mediterranean Sea. Sète (France), 9-11 February 2005. *FAO Fisheries Report* N° 820, Roma. FAO. 2007. 38 pp.
- FAO/GFCM. Report of the SCSA/SCCESS/SCSI Transversal Workshop on Selectivity in the Mediterranean Trawl Fishery. Barcelona, Spain 2-4 April 2007.
- GFCM. 2010. Transversal workshop on selectivity improvement, by-catch reduction and alternative gears. Alexandria, Egypt, 25-27 October 2010, 55 p.
- Holst, R., Madsen, N., Moth-Poulsen, T., Fonseca, P. & Campos, A. 1995. Manual for Gillnet Selectivity. European Commission Project reference XIV/1810/C1/94/119.
- Nedelec, C.; Prado, J. Definition of fishing gear categories. Définition et classification des catégories d'engins de pêche. Definición y clasificación de las diversas categorías de artes de pesca. *FAO Fisheries Technical Paper* N° 222. Revision 1. Rome, FAO. 1990.92 p.
- O'Neill, F.G. and Herrmann, 2007. B. PRESEMO- A predictive model of codend selectivity- a tool for fishery managers. Published by Oxford Journals on behalf of the International Council for the Exploration of the Sea.
- Prado J. (compiler) 1990. Fisherman's Workbooks. Fisheries Industries Division FAO. In collaboration with P.Y. Dremlere (IFREMER, Sète). Published with the FAO by Fishing News Books, Oxford 1990, 185 p.
- Millar, R.B. and Fryer R.J. 1999. Estimating the size selection curves of towed gears, traps, nets and hooks. *Reviews in Fish Biology and Fisheries*, 89-116
- Sacchi, J. 1995. Interest and reliability of static nets selectivity studies. Gillnet Selectivity Workshop. Hirtshals 23-24 November 1995. 4 pp.
- Sacchi, J. and B. Fontaine, 1995. Review of Gillnet selectivity concepts and literature. Gillnet Selectivity Workshop. Hirtshals 23-24 November 1995.
- Soler, I., Salom, S. & Martinez Sanz, A.V. 2012. Standardization report on ideal technical conditions for Mediterranean Sea trawling. Cofradia de Pescadores de Alicante (Spain). 146 pp.
- Stewart, P. 2002. A review of studies of fishing gear selectivity in the Mediterranean. *Informes y Estudios COPEMED* N° 9. Editado por R. Robles y P. Hernandez 56 pp.
- Suuromen, P., F Chopin, C. Glass. S. Lokkeborg, Y. Matsushita, D. Queirolo & D. Rihan 2012. Low impact and fuel efficient fishing— Looking beyond the horizon. *Fisheries Research*. Volumes 119–120, May 2012, Pages 135–146
- Tudela, S. 2004. Ecosystem effects of fishing in the Mediterranean: an analysis of major threats of fishing gear and practices to biodiversity and marine habitats. *Studies and Reviews*, General Fisheries Commission of the Mediterranean, N° 74, Roma 44 pp.
- Willeman, D.A., Ferro, R.S.T., Fonteyne, R., Millar, R.B. (editors) 1996. Manual of methods of measuring the selectivity of towed fishing gears. ICES Cooperative Research Report N° 125
- ftp://ftp.fao.org/FI/DOCUMENT/gfcm/sac_scsi_scsa_scess/2007_april/transversal_ws/Report.pdf
- <http://www.fao.org/docrep/008/t0367t/t0367t00.htm>
- <http://www.fao.org/docrep/010/ah827e/AH827E09.htm>
- <http://www.fao.org/docrep/005/X7788E/X7788E00.HTM>

EVALUATION FORM CopeMed II

WORKSHOP ON MEDITERRANEAN GEARS, FISHING TECHNOLOGY AND SELECTIVITY

Date and Place: Tangier, Morocco, 26-30 November 2012

Kindly complete the evaluation form in order to give your opinion about the course.

Participant name :
(Optional)

Position :

Organisation :

1 – Did the course meet with your expectations?

YES NO

2 – The course contributions helped to:

Refresh your knowledge
 Learn new things

3 – Can you give your points of view on the conditions under which the course was developed?

Duration of the course:

Too long Suitable Too short

Conduct / Coordination:

Satisfactory Unsatisfactory Excellent

Theoretical part:

Satisfactory Too short

Documentation:

Satisfactory Insuffisant

General Organisation:

Good Suitable Bad

4 – Between 1 and 5 : Do you think, you have gained enough knowledge to be able to continue the training (course objective) by yourself?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Comments:

5 – Between 1 and 5 : Based on what you have learned in this course, do you think this type of courses and tools will facilitate / improve your work?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Comments:

6 – For which specific points do you think you will need extra help in the future?

6.1:

6.2:

6.3:

7 – Do you have any remarks or suggestions for this course?

8 – Can you summarize in a sentence your impression on the course?

9 – Please evaluate the teacher's team (Materials and Communication)

Prof. J. Sacchi:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Prof. I. Soler:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Prof. S. Salom

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

10 – Between 1 and 5: Organisation by CopeMed II

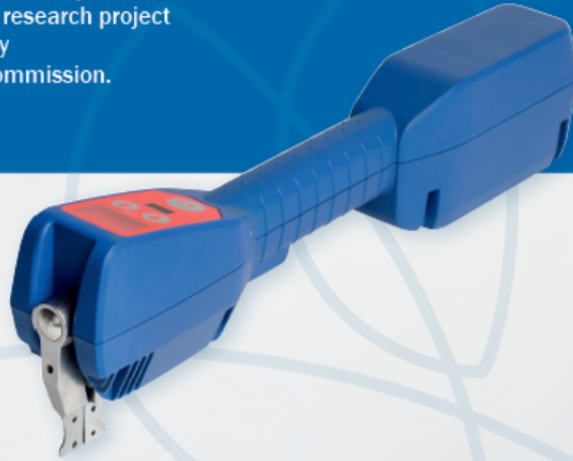
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Comments:

OMEGA MESH GAUGE MANUAL

Omega Mesh Gauge MARELEC

Developed and tested by
an international research project
and co-funded by
the European Commission.

**SPECIFICATIONS**

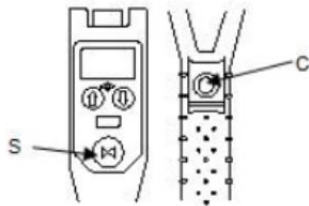
Mesh gauge opening: 10 - 300 mm
Precision : 1 mm, 1 N
Load tension : 10 - 20 - 50 - 125 N
Battery operated
CE registered model

MARELEC
Food Technologies
Redanweg 15
8620 Nieuwpoort - Belgium
T +32 58 222 111
F +32 58 239 280
sales@marelec.com

www.marelec.com

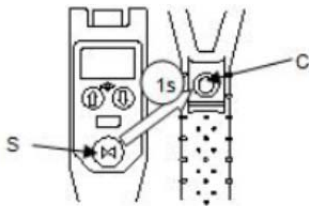


Manual



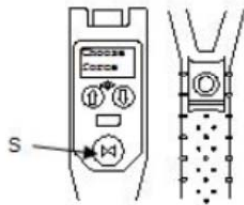
Step 1

To power up the gauge, press the command button (C)



Step 2

To start the selftest press the select (S) button, followed by the command (C) button within 1 second



Step 3

Select the requirement measurement force using the arrow keys, according to the table below, and press the select (S) key to confirm.

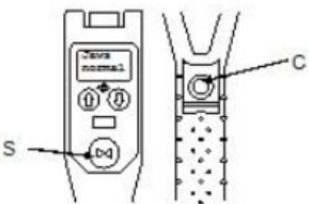
| | | |
|------|----------|------|
| 125N | > 55mm | |
| 50N | > 35mm | < 55 |
| 20N | < 35mm | |
| 10N | Set nets | |



Standard 40...200 Small 10...70 Extended 140 .. 300mm

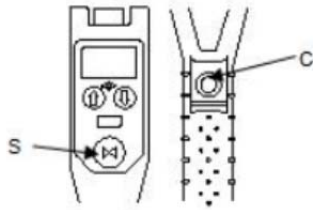
Step 4

Install the right jaws if necessary

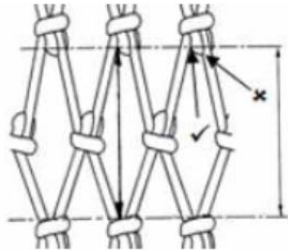


Step 5

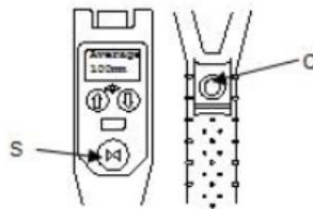
If the normal jaws are used, skip this step. Press the down key 7 times till you see 'jaws normal' on the display. Press the select (S) key to edit the setting, use the up/down keys to select the right value, and press the select (S) key again to confirm. Press the command (C) key to quit the menu.

**Step 6**

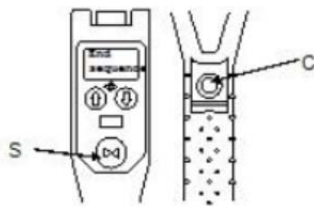
To start a measurement, press the command (C) button 1 time. When the measurement is finished, accept (and save) the measurement by pressing the command (C) button a second time, or reject it by pressing the select (S) button. To close the jaws press and hold the command (C) button.

**Step 7**

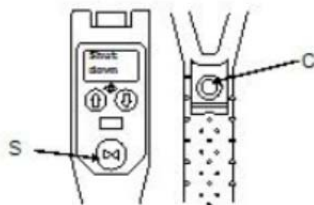
Always measure the largest possible mesh size

**Step 8**

To readout the average of the current sequence measurements, press the UP key 1 time. To quit the menu, press the command (C) button

**Step 9**

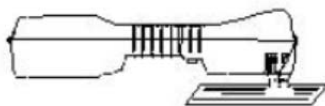
To start a new sequence, press the down key 3 times till you see 'end sequence' on the display. Press the select (S) key to confirm. Now you get 'are you sure?' on the display. Press the select (S) key again to confirm, or any other key to cancel.

**Step 10**

To shut down the gauge, press the up key 2 times till you see 'shut down' on the display. Press the select (S) key to confirm.

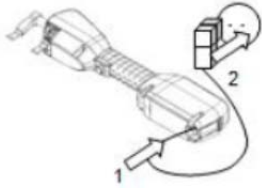
Step 11

Recommended: test the length measurement every time after the self test. To do so, measure one of the grooves in the test plate.

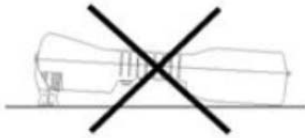


**Step 12**

Recommended: test the force measurement once every six months.
To do so hang one of the test weights on the fixed jaw.

**Step 13**

To charge the gauge, connect the charger to the gauge, and plug the charger into the mains socket.

**Step 14**

Never put the gauge on it's fixed jaw!

Measures with MAUN: