

SEAFISH

Seafish Gear Database

Mike Montgomerie
Gear Technologist

www.seafish.org/geardb/

Seafish Gear Database is available at www.seafish.org/geardb/

Provides easy access to information on fishing gear and selectivity devices

Since opening in 2016 it has had a steady increase in visitor numbers



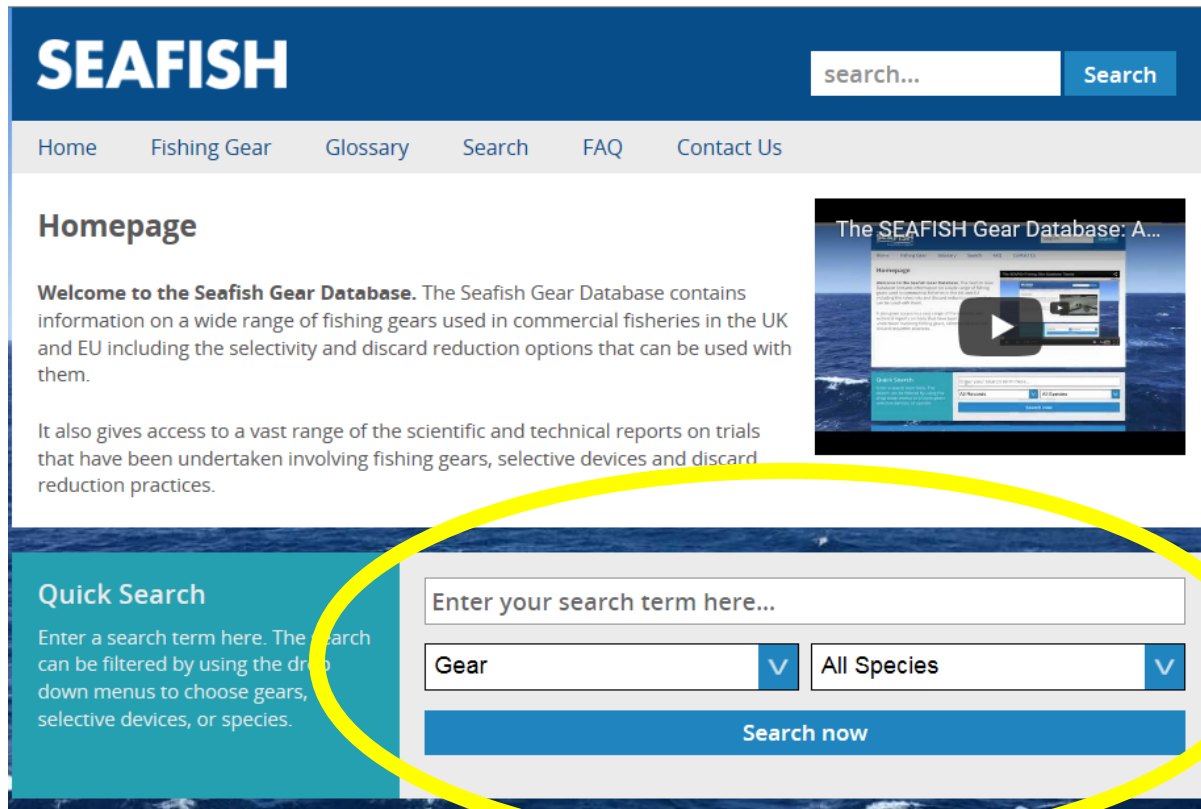
Over 18,000 users

Over 56,000 page views

The Database is regularly updated with further information on the existing pages.

New Gear and Selectivity pages added as necessary.

There has been several recent updates to all the pages to make the information easier to access.



Home page has been altered to bring the main search boxes into view immediately the page opens

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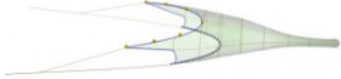
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Demersal Trawl - Nephrops hopper trawl

[Back](#)

A nephrops trawl towed on the seabed, with the mouth held open by a pair of otter boards (trawl doors) designed and rigged to be towed over rough seabeds to target nephrops

[More Information](#)



Alternate Names prawn hopper

Gear Classification [Herding Gear](#), [Mobile Gear](#), [Towed or Dragged Gear](#), [Trawls](#)

Similar Gear [Demersal Trawl - General](#), [Demersal Trawl - Nephrops trawl](#), [Demersal Trawl - Rockhopper trawl](#), [Twin Rig Trawl - Nephrops twin rig](#)

Main Target Species (UK) nephrops

Jump to:

[Bycatch](#) [Relevant Selective Devices](#) [Environmental Impact](#) [Further Information](#) [Reports](#) [Media](#)

Gear Pages

Introduced 'click on' icons for each of the sections to save having to scroll down the page.

Bycatch

Possible Bycatch: Any demersal species that frequents the nephrops grounds

Relevant Selectivity Devices

[4 Panel Cod-end](#)

[Cod-end Mesh Sizes](#)

[Coverless Trawls](#)

[Diamond Mesh size](#)

[Flexible Grids](#)

[Floating Sweeps](#)

[Flying Doors](#)

[Gear Operation](#)

[Gear Size](#)

[Ground gear](#)

[Headline Height](#)

[Inclined Flexible grid](#)

[Inclined Netting Grids](#)

[Inclined Rigid Grid](#)

[Inclined Separator Panels](#)

[Rigid Grid](#)

[Seasonal Closures](#)

[Seltra Box](#)

[Separator panels](#)

[Skippers Knowledge](#)

[Spatial Management](#)

[Square Mesh Cod-ends](#)

[Square Mesh Panels](#)

[Strengthening bags - Lifting bags](#)

[T90 Cod-ends](#)

[T90 Netting](#)

[Twine Thickness](#)

[Trawl Design](#)

[Twine Thickness](#)

[Very little needed](#)

Environmental Impact

Discards – Some Nephrops / prawn trawls can be susceptible to by-catch of small round fish and flat fish below the minimum conservation size due to the small mesh sizes that have to be used in these trawls to retain nephrops. Generally, compared to standard prawn trawls, prawn hopper trawls use slightly larger mesh in the trawls, the lower panel of the net stays clear of the seabed and the nets are opened up more, the meshes stay further open, and all this allows easy escape of seabed debris and small fish. They are generally towed in areas of low concentrations of other fish but still need to be fitted with legislation square mesh panels. Many of the skippers actually use square mesh panels with large mesh sizes than the regulation.

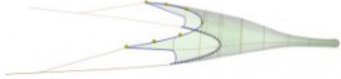
Seabed impact -As with all trawls there will be a certain degree of seabed impact with the trawl doors. When used properly the weight of any trawl door on the seabed will be much reduced compared to its weight on land. In most demersal trawl fisheries the weight of the trawl door on the seabed will be approximately 20-25% of its weight in air. This is due to several factors. One is about an 8 -10% reduction due to the weight of steel and other materials in water. The other major factor is the tension of the gear behind the trawl door and the uplift from the warp towing the trawl door. The ground gear on a nephrops hopper trawl is made up of large rubber discs spaced out using smaller rubber discs between them with it all threaded onto either wire or chain. Although this can look heavy it is quite light contact on the seabed as it is designed to 'bounce' easily over the patches of hard rough ground interspersed on the muddy seabeds of some of the nephrops grounds.

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Demersal Trawl - Nephrops hopper trawl

A nephrops trawl towed on the seabed, with the mouth held open by a pair of otter boards (trawl doors) designed and rigged to be towed over rough seabeds to target nephrops



The diagram illustrates a nephrops hopper trawl, showing its funnel-shaped structure and the otter boards (trawl doors) at the mouth. The trawl is depicted in a perspective view, highlighting its elongated shape and the internal mesh structure.

[More Information](#)

Alternate Names prawn hopper

Gear Classification [Herding Gear](#), [Mobile Gear](#), [Towed or Dragged Gear](#), [Trawls](#)

Similar Gear [Demersal Trawl - General](#), [Demersal Trawl - Nephrops trawl](#), [Demersal Trawl - Rockhopper trawl](#), [Twin Rig Trawl - Nephrops twin rig](#)

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Gear Pages

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Further Information

Nephrops, are also known as Langoustine or Dublin Bay Prawn, in UK, they are usually referred to as 'prawns' hence the name prawn net.

Nephrops usually inhabit areas of soft muddy sediments. Nephrops trawls have been developed to target nephrops on these clean soft seabeds. There are areas where nephrops live that are close to harder seabeds or where the muddy grounds are interspersed with stones and rocky out crops that would rip a standard nephrop trawl, it is these areas that a nephrops hopper trawl has been developed to fish over. The main difference is that the net is fitted with a rock hopper footrope to enable the gear to be able to tow over these 'patchy' areas. The design of the nets has altered too, the main difference is there is minimum of slack netting and the bottom panel of the gear is cut to stay clear of the seabed to prevent damage. Often there are more of the larger nephrops in these areas that increases their value to the fishermen.

[show less information](#)

Reports

- 📄 <http://www.seafish.org/geardb/wp-content/uploads/2015/06/Swimming-and-orientation-on-nephrops-in-a-trawl..pdf>
- 📄 [Coverles trawl discrds Seafish](#)
- 📄 [Icing nephrops 1994](#)
- 📄 [Alternatives to sodium metabisulphite - Flier](#)
- 📄 [Alternatives to sodium metabisulphite Seafish 2008](#)
- 📄 [Nephrops good Practice guide](#)
- 📄 [Quality at Sea Nephrops key features](#)
- 📄 [Stress and Mortality on live nephrops. Seafish 2005](#)
- 📄 [Nephrops net grid trials 2012](#)
- 📄 [Quality of Trawled Nephrops Seafish 2005](#)

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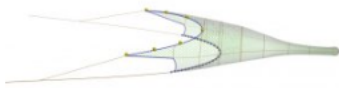
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Demersal Trawl - Nephrops hopper trawl

Back

A nephrops trawl towed on the seabed, with the mouth held open by a pair of otter boards (trawl doors) designed and rigged to be towed over rough seabeds to target nephrops



More Information

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Similar Gear Demersal Trawl - General, Demersal Trawl - Nephrops trawl, Demersal Trawl - Rockhopper trawl, Twin Rig Trawl - Nephrops twin rig

Main Target Species (UK) nephrops

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Bycatch

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Media



rops ready for market



Iced whole nephrops ready for the market



Model Prawn Trawl wi...



A haul of nephrops straight out of the trawl ready to be processed onboard.



also known as a Dublin Bay prawn. Langoustine or prawn.



el as used in some nephrops fisheries release bycatch.



rops disc trawl on the quayside.



Trawling and Tubing L...

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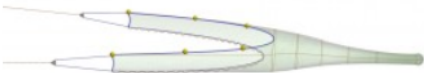
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Coverless Trawls

Back

A coverless trawl has the top panel of the net cut back so that the headline and footrope are of similar length. This helps to allow the release of fish rising in front of the footrope.



More Information

Selection type Post Capture

Similar devices Coverless Trawls, Headline Height, Sweep/Bridle alterations, Seasonal Closures, Separator Panels

Jump to:

Relevant Fishing GearSelectivityFurther InformationReportsMedia

Similar click on icons have been added to the selectivity devices pages

Also a change to the presentation on selectivity information for each device

Move away from a scoring system to a longer general explanation

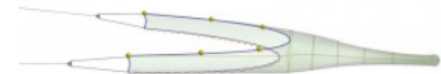
Size Selectivity

A coverless trawl is more effective in releasing the larger fish above approximately 150mm. Haddock, whiting and to some extent hake are known to rise ahead of the footrope of the trawl and can escape more easily from a coverless trawl. However there is a tendency for the smaller fish of these species to stay close to the seabed in which case the numbers escaping upwards ahead of a coverless trawl will be minimal. Fish below approximately 150-180mm in length tend to stay low in the trawl and swim just above the sand cloud created by the ground gear of the trawl. This may be a survival instinct to stay close to the seabed away from many predators.

Coverless Trawls

[Back](#)

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More Information

Selection type [Post Capture](#)

Similar devices [Coverless Trawls](#), [Headline Height](#), [Sweep/Bridle alterations](#), [Seasonal Closures](#), [Separator Panels](#)

Jump to:

[Relevant Fishing Gear](#)[Selectivity](#)[Further Information](#)[Reports](#)[Media](#)

Similar click on icons have been added to the selectivity devices pages

Further Information

Coverless Trawl

Another selective design working on the fish's natural escape behaviour is the coverless trawl. Over the years traditional trawls have evolved with the top panel projecting further forward than the lower panel (cover or square), to prevent the escape of fish upwards, ahead of the trawl.

The coverless concept removes this overlap and makes the headline and footrope approximately the same length, so that they are directly above one another when the net is being towed, allowing fish to escape upwards. This is usually combined with a reduction in headline height to make it easier for the unwanted fish to escape.

This gear has proved to be very effective in reducing the bycatch of haddock and whiting greater than 150mm in length. It would appear that the smaller fish of these species do not rise up ahead of the trawl, but stay close to the seabed and pass into the trawl. One of the big advantages of this type of device is that the fish are allowed to escape without ever being caught by the net, therefore there should be a 100% survival rate of the fish passing above the lowered headline.

Coverless nets have been used successfully for more than 15 years by some inshore nephrops fishermen in UK to reduce their bycatch of whiting and haddock. In many situations by reducing the bulk of fish entering the trawl there is a noticeable increase in the quality and quantity (7 - 10%) of nephrops retained in the trawl. It is a fairly simple process for the more able skippers to alter an existing trawl to be coverless, but it is better to get a purpose built trawl that is designed to accommodate the reduced headline height. But one word of caution. Due to the reduction in drag, as a consequence of the reduced headline height, and the freedom the net has to spread, due to the extended headline, the skipper often has to make other alterations to his overall gear setup to work a coverless trawl efficiently

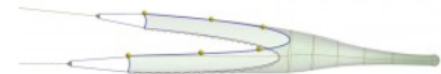
[show less information](#)

Reports

- [Comparison of a coverless nephrops trawl to a standard trawl CR196](#)
- [Comparison between the quality of nephrops landed from a Coverless trawl to that from a standard prawn trawl](#)
- [Seafish Prawn Trawl Guidance](#)
- [Design of a Coverless trawl SR532 - altering a standard trawl to be coverless](#)
- [Selectivity of a coverless trawl compared to a standard nephrops trawl SR524](#)
- [Nephrops Selectivity SR567](#)
- [Discard reduction in the Farne Deeps SR 600](#)
- [Fact sheet - nephrop quality in coverless trawls](#)
- [Coverless trawl discards](#)

Coverless Trawls

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More Information

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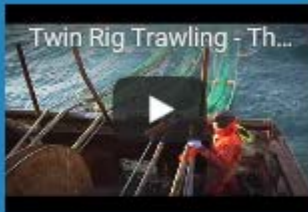
Similar devices [Coverless Trawls](#), [Headline Height](#), [Sweep/Bridle alterations](#), [Seasonal Closures](#), [Separator Panels](#)

Jump to:

[Relevant Fishing Gear](#)[Selectivity](#)[Further Information](#)[Reports](#)[Media](#)

Similar click on icons have been added to the selectivity devices pages

Media



<https://tool.gearingup.eu/#/trawl/device/escape-panels/page/1>

Links to relevant pages on the Gearing up website and the Discardless website

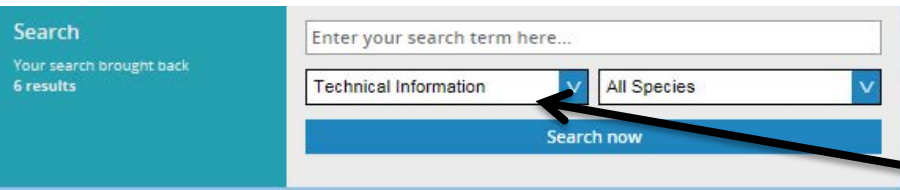
Looking for something else in the Seafish network?

[Go to Seafish.org](https://seafish.org)

Biggest improvement to the database – The addition of a third search function for technical information

This will contain most of the information that Seafish sends out to answer our many gear enquiries from industry

It will also hold much of the information that forms the syllabus of the Seafish Gear Technology Training courses



The screenshot shows the SEAFISH search interface. On the left, a teal sidebar contains the text 'Search' and 'Your search brought back 6 results'. The main search area has a text input field with the placeholder 'Enter your search term here...'. Below this are two filter dropdown menus: 'Technical Information' and 'All Species', both with a blue downward arrow icon. A blue 'Search now' button is positioned below the filters. A black arrow points from the text on the right to the 'Technical Information' filter dropdown.

Option to refine search
using Technical Information
function

SEAFISH

Search

Your search brought back
6 results

Technical Information



All Species



Search now



Best Practice Guidance for Assessing the Financial Performance of Fishing Gear

Technical Information

View



Flip Up Ropes Construction

Technical Information

The design and construction of a flip up rope for fitting into a demersal otter trawl.

View



Bridle Angle and Wing End Spread calculations

Technical Information

Calculations for the wing end spread and Bridle angle of a single trawl using a calculator.

View



Three Warp Twin Rig - Shortening the Centre Warp

Technical Information

These information sheets provides figures to advise skippers towing three warp twin rig trawl gear how much to shorten the centre warp by to keep the gear square

View

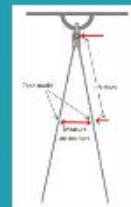


Calculating the Sweep Angle and Wing End Spread of a Single Demersal Trawl. (auto)

Technical Information

An easy to use calculation for wing end spread and sweep angle of a single trawl.

View



Trawl Door Spread

Technical Information

The distance between the trawl doors is an important piece of information for any trawler skipper to know at all times.

View

Calculating the Sweep Angle and Wing End Spread of a Single Demersal Trawl. (auto)

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Knowing the opening of their trawl gear in relation to the length of sweeps etc is critical for any trawl skipper.

This calculation gives an easy way for a skipper to estimate the sweep angle and wing end spread of his gear by entering the measured door spread, sweep length and trawl dimensions in the blue boxes. This is an automated version of the calculations included in fact sheet '[Bridle Angle and Wing End Spread Calculations](#)'

For advice on methods measuring door spread with different towing arrangements, look in [Measuring the door spread](#)

Related Gear

[Demersal Trawl - General](#)[Demersal Trawl - Nephrops hopper trawl](#)[Demersal Trawl - Nephrops trawl](#)[Demersal Trawl - Rockhopper trawl](#)[Demersal Trawl - Scraper net](#)[Demersal Trawl - Sole Trawl](#)

Download Document
Calculating-Sweep-Angle-
and-Wing-End-Spread-of-a-
Single-Demersal-trawl-1.xls
- (0.08mb)

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Search

Your search brought back
6 results

Technical Information



All Species



Search now



Best Practice Guidance for Assessing the Financial Performance of Fishing Gear

Technical Information

View



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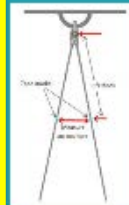


Calculating the Sweep Angle and Wing End Spread of a Single Demersal Trawl. (auto)

Technical Information

An easy to use calculation for wing end spread and sweep angle of a single trawl.

View



Trawl Door Spread

Technical Information

The distance between the trawl doors is an important piece of information for any trawler skipper to know at all times.

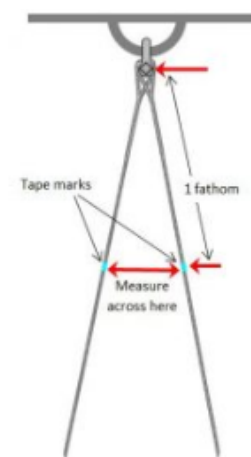
View

Trawl Door Spread

[Back](#)

The distance between the trawl doors is an important piece of information for any trawler skipper to know at all times. From this the skipper will be able to estimate if his trawl gear is opening to its optimum for the fish species he is targeting. Many larger vessels have electronics with acoustic sensors on the gear to display the door spread and other parameters in the wheel house. This information sheet gives details of how vessels without this expensive equipment can estimate the distance between their trawl doors (door spread).

By using dimension in conjunction with other known gear parameters the skipper can estimate the opening for his net or nets (Wing End Spread) and an estimation of the angle of his sweeps to the direction of travel (Sweep angle or Bridle Angle). This calculation is [available here](#).



Related Gear

[Demersal Trawl - General](#)
[Demersal Trawl - Nephrops hopper trawl](#)
[Demersal Trawl - Nephrops trawl](#)
[Demersal Trawl - Rockhopper trawl](#)
[Demersal Trawl - Scraper net](#)
[Demersal Trawl - Sole Trawl](#)
[Multi rig - Quad rig](#)
[Multi Rig Trawl - more than four nets](#)
[Multi Rig Trawl - nephrops triple rig](#)
[Multi Rig Trawl - Sole triple rig](#)
[Pelagic Trawl](#)
[Semi-Pelagic Trawl](#)
[Twin Rig Trawl - Mixed species twin rig](#)
[Twin Rig Trawl - Nephrops twin rig](#)
[Twin Rig Trawl - Sole twin rig](#)


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Spread-of-trawl-doors.pdf -
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Calculating the spread of trawl doors

This fact sheet gives fishermen the information to enable them to measure the spread of their trawl doors without the need for costly electronic equipment

To ensure that trawl gear is towed at its optimum efficiency it is necessary for the skipper to know how far apart his trawl doors are. It is the spread of the trawl doors, in conjunction with the length of sweeps and bridle, and the dimensions of the trawl that determines the angle that the sweeps and bridle take up to the direction of towing. This angle, known as the sweep angle or bridle angle, has to be set at a suitable angle for the target species on the chosen towing speed. (See fact sheet 1001) If this distance (door spread or DS) is known it will give the skipper a better understanding of his gear. It will enable him to calculate the opening of his trawl at the wing ends and the angle that the sweeps and bridle are being towed at. Knowledge of these two parameters is paramount in optimising the spread of the gear to ensure it maintains an efficient opening to suit the behaviour of the target species.

Ideally door spread can be monitored using one of the proprietary trawl monitoring systems, such as Sonarwin, Nodas and Sonarcast. These systems can be costly, particularly for the smaller class of vessels but they will give the skipper a convenient and reliable measure of the door spread in the wharwhouse. Many of these systems will also provide a door-to-door weight distance in a multi rig setup (one rig / triple rig). One of the big advantages of these systems is that the readout is constantly being updated giving the skipper an indication of what is happening to his gear if it is being towed. An approximate change in door spread can be an early indication that there may be problems with the gear. These can include:

- the gear has come fast on the seabed,
- one or both of the doors has broken down,
- some part of the gear has broken,
- the gear has picked up an obstacle
- there is some other problem with the gear

This will encourage him to haul the gear and correct the problem rather than continue the tow with the gear taking in an inefficient manner. With experience, the constant readout of the door spread will enable the skipper to better understand what is happening to his gear as it is being towed and give an early indication that there may be a problem with the gear and help him keep his gear towing to its maximum efficiency. Once the skipper has a figure for his door spread he can calculate the sweep angle and wing and spread giving him a better understanding of his gear. If the vessel does not have any of these systems then, there are 3 basic ways to calculate the door spread of trawl doors. Both these calculations will give a reliable estimation of the spread of the trawl doors allowing the skipper to work out other parameters of his gear set up. Although these calculations will give a fairly accurate numerical figure, they really come into their own as a relative figure as changes are made to the setup of the trawl gear.

Calculating the Spread of Trawl Doors 1/10/07
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Do not wait until you think something is wrong with the gear before measuring the door spread. Take regular measurements when the gear is working well. This will give a target figure to aim for if the gear goes out of fishing. These calculations can be used in single rig and 3 warp tow rig to give an accurate calculation of door spread. On a 2 warp tow rig using split warp set up it can be used to give a measurement across the point where the split warps join the main warp. This figure can then be used to estimate the actual total door spread. (See 2 warp tow rig information sheet). The decision on which calculation to use depends upon whether the vessel tows its warps from a single point (calculation A Single Point) or from two separate points such as from the gullies blocks (calculation B Two Separate Points or gullies blocks). For these calculations, a single point is deemed to be when the two towing strips for the port and starboard warp are towed from a single shackle as in Fig 1. All other arrangements should be classed as towing from two separate points. Some common set ups are shown in Figs 2,3,4,5. Both calculations work by measuring the warp divergence. If the towing strips are not into a single shackle there will always be a gap between the inboard ends. This gap may only be very small at the vessel but by the time it is worked through the door spread calculation it will result in a large discrepancy. It is important therefore to get the initial measurement as accurate as possible without putting yourself in danger. When towing a 3 warp tow rig gear measure the total door spread by using the two outer warps for the measurements. Unless the boat is towing on a straight course with the gear directly in line astern, the centre warp will have a very different horizontal divergence from that of the outside two. This is liable to give a distorted reading of door spread.



Fig 1

Towing from a single point.

Use calculation A



Fig 2

Towing from a single point would using 1 shackle. It is difficult to find the two eyes where the towing strips meet.

Use calculation B



Fig 3

Towing from two separate holes on the towing bar. The two eyes where the towing strips meet would be well ahead of the ends of the strips. The actual position would vary with different door spreads.

Use calculation B

Calculating the Spread of Trawl Doors 1/10/07
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Fig 2

Towing from a single point using 1 shackle. It is difficult to find the two eyes where the towing strips meet.

Use calculation B



Fig 3

Towing from two separate holes on the towing bar. The two eyes where the towing strips meet would be well ahead of the ends of the strips. The actual position would vary with different door spreads.

Use calculation B



Fig 4

Towing from two separate holes on a towing bar. The two eyes where the towing strips meet would be well ahead of the ends of the strips. The actual position would vary with different door spreads.

Use calculation B



Fig 5

Towing from a running chain that is free to move around a block as the vessel changes. It is very difficult to estimate where the two eyes where the towing strips meet would be. Use calculation B. Take extra care when measuring door spread with this arrangement as the towing chain is liable to slide in or out without warning.

Use calculation B

Safety.

One problem with these calculations is that it is necessary for somebody to go onto the stern of the vessel and physically measure the distance between the towing strips. This will often involve leaning or climbing outward so take care!

Before doing this the skipper and crew should do a 'risk assessment' on the procedure in relation to their particular vessel.

Calculating the Spread of Trawl Doors 1/10/07
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Calculation A

Towing From a Single Point

1 From the vessel end of the towing strips, in the diagram it will be the pin of the shackle, measure down each strip 1 fathom (6 feet). Put a mark on each towing strip - insulating tape is ideal for this. (Fig 6)

2 Measure across between the two tape marks in inches. Identify the measurements should be taken from the centre of the towing strips or towing chains.

3 Multiply this figure by the length of warp shot in fathoms.

4 Divide the result by 12 to give the door spread in feet.

5 To allow for divergence of the warps it is advisable to add about 5 - 6%.

The more accurately the measurements are done the more accurate and reliable the result will be.

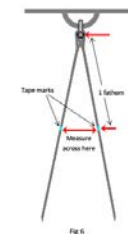


Fig 6

Example:

Distance across the tape marks = 13.5 inches

Warp out = 175 fathoms

$13.5 \times 175 = 2362.5$ inches

2362.5 divided by $12 = 196.875$ feet

$196.875 \times 6\% = 209$ feet

Therefore distance between the trawl doors is 209 feet.

Calculating the Spread of Trawl Doors 1/10/07
This fact sheet has been downloaded from the Seafish Gear Database - www.seafish.org/geardb
For more details contact Mike Montgomery on 01482 750 517 or mike.montgomery@seafish.org.uk

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Calculation B

Towing From Two Points

To be used when towing from two separate points or from the gullies blocks. The calculation is slightly different for each situation.

1 From the vessel end of the towing strips, come down clear of any shackles and tapers and put a tape mark on each towing strip. Measure down each strip one fathom (6 feet) and put another tape mark on (insulating tape is ideal for this). (Fig 7)

2 Measure between the top two tape marks (A) in inches. Identify the measurements should be taken from the centre of the towing strips or towing chains. Measure between the lower two tape marks (B) in inches.

3 Subtract distance A from distance B

3 Multiply this figure by the length of warp shot in fathoms.

4 Divide the result by 12 to give the door spread in feet.

5 To allow for divergence of the warps it is advisable to add about 5 - 6%.

The more accurately the measurements are done the more accurate and reliable the result will be.

Example:

Distance across the top two tape marks (dist A) = 4 inches

Distance across the lower two tape marks (dist B) = 18 inches

Subtract A from B = 14 inches

Amount of Warp out = 175 fathoms

$14 \times 175 = 2450$ inches

2450 divided by $12 = 204.166$ feet

$204.166 \times 6\% = 210.6$ feet

Therefore the distance between the trawl doors is 210.6 feet.

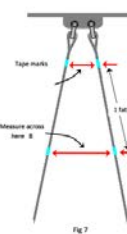


Fig 7

Therefore the distance between the trawl doors is 210.6 feet.

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If towing from the warps in the gullies blocks as in Fig 8, the calculation is the same but add distance A to the calculated door spread figure for a more accurate figure.

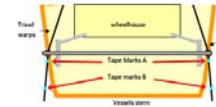


Fig 8

Example:

Distance across the top two tape marks (dist A) = 175.6 inches

Distance across the lower two tape marks (dist B) = 181.8 inches

Subtract A from B = 14 inches

Amount of Warp out = 175 fathoms

$14 \times 175 = 2450$ in

2450 divided by $12 = 204.166$ ft

$204.166 \times 6\% = 210.6$ ft

Subtract A from B, 175.6 inches to 210.6 inches = 234 ft

Therefore the distance between the trawl doors is 234 feet

For more information on Trawl Doors and other fishing gear please go to the Seafish gear database at <http://www.seafish.org/geardb/> or the Seafish website

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