

# Weak Links & Anchoring Techniques

## Why Are Weak Links Required?

**Weak links** are intended to allow the release of the buoy, flotation or weighted device from the line in a way that when they release, the remaining line (that was connected to these devices) will not have a knot on its end. An eye left on the line made by splicing, tucking or hog rings is acceptable. Splices are not considered to be knots.

*All weak links must be placed as close as operationally feasible to each individual buoy, flotation or weighted device. Each management area has specific weak link breaking strength requirements. See regional trap/pot and gillnet guides for more information.*

## Weak Links For Buoy, Flotations or Weighted Devices

### 1) HOG RINGS



Figure 1

Hog rings can be used to form an eye in the end of a line that will function as a weak link (Figure 1). Up to 7 may be used to create a 600 pound weak link and up to 5 for a 500 pound weak link. Hog rings can be distributed (from 6” to 12”) without significantly affecting the strength.



Figure 2

A variation of this technique (Figure 2) is to connect a weak link from a short length of line. The line is formed into a loop with its ends overlapped and hog ringed to each other. Five hog rings form a suitable 600 pound link while 4 are sufficient for a 500 pound weak link. For this weak link to function properly, the loop must move freely where it attaches to both the buoy, flotation, or weighted device and the line.



Figure 3

A line may also be passed through a plastic swivel two times (Figure 3), not forming a knot, and hog ringed back on itself with up to 3 hog rings.



## USING HOG RINGS TO ACHIEVE A SUITABLE WEAK LINK



Figure 4

When threading the buoy line only once through the buoy bucket/spindle, up to 7 hog rings may be used to create a weak link no greater than 600 lbs, and up to 5 hog rings used to create a weak link not exceeding 500 lbs.



Figure 5

A buoy line can be laid alongside a short lead and hog-ringed to form a weak link. 11 hog rings produced a breaking strength of 345 lbs as tested by the NOAA Fisheries Gear Team.



Figure 6

To produce a weak link from a short length of line, the line is formed into a loop with its ends overlapped and hog-ringed to each other. Five hog rings form a suitable 600 lb weak link, while four are sufficient for a 500 lb weak link. The buoy line can be passed through the loop only once, then spliced, hog-ringed or tucked back on itself to make a knotless connection.



Figure 7

A buoy bucket-type weak link can be made using no more than 7 hog rings to create a weak link less than or equal to 600 lbs, and no more than 5 hog rings to create a weak link less than or equal to 500 lb weak link. When using this hog ring buoy bucket-type weak link, the buoy line must pass through the hog-ringed eye only once and be tucked, spliced or hog ringed back to itself, making a knotless eye.

## USING HOG RINGS TO ACHIEVE A SUITABLE WEAK LINK (CONTINUED)



Figure 8

When connecting to the eye of a buoy spindle, a knot may be used on one side of the eye as shown, allowing for easy buoy removal. When threading the buoy line only once through the buoy becket/spindle or through the loop, up to 7 hog rings may be used to create a weak link no greater than 600 lbs and up to 5 hog rings used to create a weak link not exceeding 500 lbs.



Figure 9

A buoy line can also be passed through the buoy spindle/becket/swivel two times, not forming a knot, and hog-ringed back on itself up to 3 times forming a weak link, meeting the 600 lb requirement.

## 2) OFF THE SHELF WEAK LINKS

Off the shelf weak links are available in a variety of styles and configurations to meet different strength requirements. The strong end of the weak link goes toward the buoy, flotation, or weighted device.



Figure 10

## ATTACHING BUOY LINES TO OFF-THE-SHELF WEAK LINKS

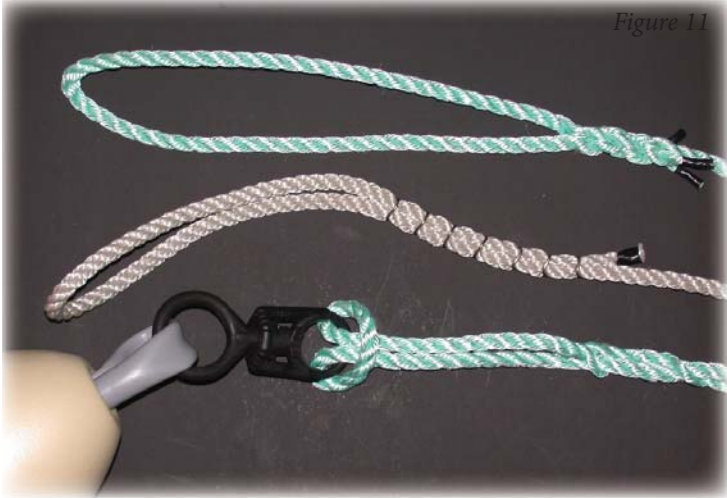


Figure 11

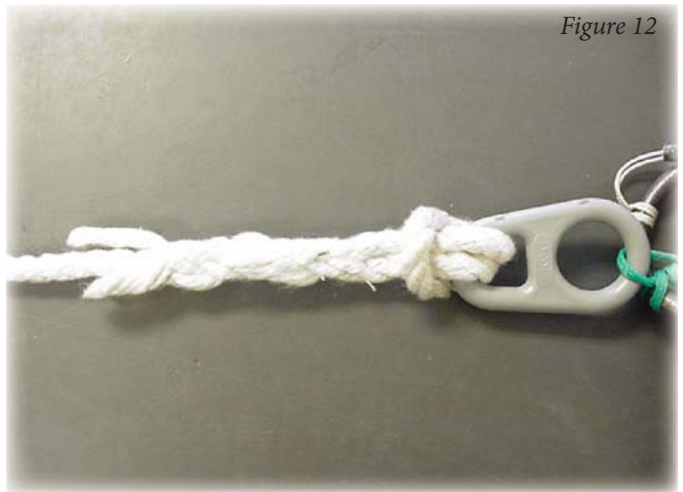


Figure 12



Figure 13



Figure 14

Attaching the buoy line to an off-the-shelf weak link using a spliced, tucked or hog- ringed eye will produce a knotless bitter end to the line when the weak link parts.

## ATTACHING BUOY LINES TO OFF-THE-SHELF WEAK LINKS (CONTINUED)



Figure 15



Figure 16

Tying to the weak link with a clove hitch or cow hitch and then splicing or tucking the bitter end of the buoy line under a strand will also produce a knotless system when the weak link parts.



Figure 17

Tying to the weak link with a clove hitch and then tucking the bitter end of the buoy line under a strand will also produce a knotless system when the weak link parts. A loop can be fastened to the strong side of the weak link allowing a fisherman to easily remove the buoy.



Figure 18

Another off-the-shelf weak link is the slip link, which works on the same principle as a jam cleat.

### 3) ROPE OF APPROPRIATE BREAKING STRENGTH

Another weak link technique utilizes Rope Of Appropriate Breaking Strength. A jumper is selected based on breaking strength data from the manufacturer. A length of rope or jumper of appropriate breaking strength may be tied into the buoy, flotation, or weighted device, thus creating a weak link, as long as the failure results in a knotless bitter end on the line. Testing by the NOAA Fisheries Gear Team can make this determination.



Figure 19



Figure 20



Figure 21

### 4) MODIFIED SWIVELS

Some swivels can be modified to conform to the weak link requirement by compromising their strength where the line attaches. However, they must be tested by the NOAA Fisheries Gear Team to ensure that they will release in the proper fashion and within the required limits. Lukian swivels with a 9/32" diameter hole and SeaSide swivels with a 3/16" diameter hole satisfy the 600 pound requirement.



Figure 22

## GILLNET FLOATLINE WEAK LINKS

Several methods of incorporating weak links into a gillnet floatline are shown below. The first two methods create a weak link by utilizing Rope of Appropriate Breaking Strength.

The first picture shows a weak link jumper spliced into the floatline. The overhand knot in the jumper reduces its strength to about 60% of its original strength. For example, putting an overhand knot in a piece of 5/16" polypropylene that has an original tensile strength of 1710 pounds will make the rope fail with a load of about 1025 pounds.

The second picture shows a weak link tied into the float rope with the fisherman's knots. These knots also reduce the strength of the rope to about 60% of its original strength.

Another alternative shows an off the shelf weak link rigged into the floatline.

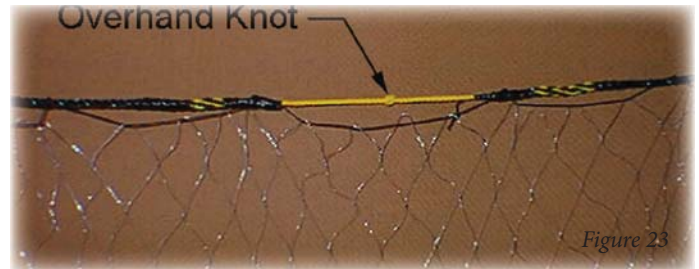


Figure 23

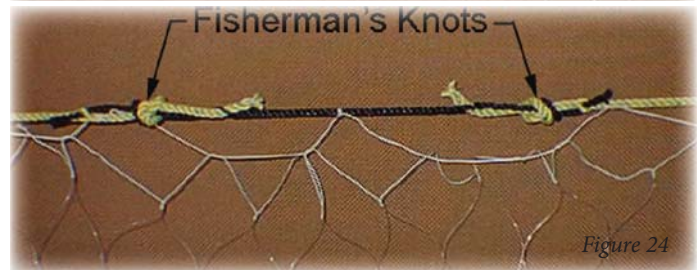


Figure 24



Figure 25

Figure 26



## GILLNET ANCHORING TECHNIQUES

At the right is an example of a burying anchor (designed to hold to the ocean bottom through the use of a fluke, spade, plow or pick) that meets the requirement of the holding power of a 22-pound Danforth-style anchor. Note, dead weights do not meet the requirements for burying anchors.

For More Information Contact the NOAA Fisheries Greater Atlantic Gear Team

Northeast Fisheries Liaison: John Higgins. (207) 677-2316. [John.Higgins@noaa.gov](mailto:John.Higgins@noaa.gov)

Mid/South Atlantic Fisheries Liaison: Glenn Salvador. (757) 414-0128.

[Glenn.Salvador@noaa.gov](mailto:Glenn.Salvador@noaa.gov)

or visit our website:

[www.greateratlantic.fisheries.noaa.gov/whaletrp](http://www.greateratlantic.fisheries.noaa.gov/whaletrp)