

USE OF REELS IN DIVING

There have been several different types of reel developed for both commercial and recreational use.

This guide is compiled to aid in the use of reels in two distinct techniques, those of use with Surface Marker Buoys and as a Distance Line.

THE REEL

The simplest form of reel has a spool, line and a winding mechanism with the extras of handle, attachments, locking mechanism and line guides.

Reels vary in both size and construction and can be “home made” or purchased at varying costs. There are however a few simple but important points to be aware of. The spool should be of sufficient size to hold the desired length of line, be free running and offer a manageable winding system. The line should be light in weight, strong enough (about 40 -60 lbs breaking strain) for it’s purpose and thin enough to cause minimal drag in water.

Home made reels can be manufactured fairly easily from a variety of materials. The spool and handle, which need to be negatively buoyant, may be of wood or plastic and may incorporate a simple locking mechanism.

The photograph depicts a power cord line which though very strong, would give considerable drag in the water. This reel has been designed for distance line penetration use.



Manufactured reels are generally either plastic or metal in construction with a handle sufficiently large for a dive glove to hold comfortably. The reel shown is one of the most common with a very rugged construction, large winding mechanism and stout attachments on both line and handle. Where the line emerges from the spool there is a line guide to assist both in deployment and line recovery.



This reel is of a much older manufacture style but incorporates all of the features of the newer models.

As diving has progressed there has been a need for a smaller reel which can more easily be stowed neatly and used as either a distance line or for deployment of a Delayed Surface Marker.

When carrying such reels it is worth remembering that the clips on both reel and line can very easily snag line or equipment. It may therefore be useful to attach the clips to each other and freed prior to usage



Use of reels can take several forms – to control a surface marker buoy, release and control a delayed surface marker buoy or act as a distance line. Common to all systems though is the need to be able to allow the line to run out freely. Thus it is necessary to perform some basic maintenance on the equipment. The line should always be rewound onto the spool in a uniform fashion and the spindle of the spool maintained free running.

Soaking the reel in fresh water to remove salt will help to maintain it.



DISTANCE LINES

A distance line is a temporary marker of the shortest route between two points. A distance line should be used to guarantee return to the start point, when visibility is poor or for penetration diving.

A reel when used as a distance line may be of the more compact type (as shown) or large and robust depending upon the terrain over which it will be deployed.

Lines which are run out through water can be thinner and buoyant, (less drag) than those which need to pass over or around solid materials such as on wreck sites or in caves. Such line will be heavier and perhaps weighted.



Distance lines should always remain taught and be deployed from one side of the diver. The reel should NEVER be attached to you as you are then effectively anchored to the site. If suitable attachment points are available fasten the distance line to them with either simple knots or wire closures.

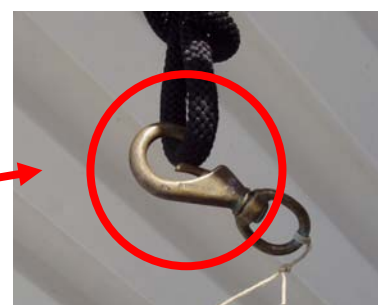
It is essential that distance lines are controlled at all times otherwise there is a very real danger of entanglement. As a safety precaution a sharp knife should always be carried.

The initial attachment of the distance line should be by passing the line around the fixed point twice and then clipped to itself.

Clipping directly to rope such as a shot line may prove to be very difficult to unfasten later.



WRONG



A Distance line may be required during low visibility or night diving. In this case the task can be improved by illuminating the line as it is deployed by use of a small torch fastened to the handle.



SURFACE MARKER BUOYS

There are two different types of Surface Marker Buoy – fixed and delayed.

The fixed SMB is an essential part of Commercial diving when lifelines are not used. It is a requirement of the Diving at Work Regulations 1997.

Delayed SMBs tend to be used in Recreational diving and Instructing, allowing the diver more freedom during the dive but allowing surface cover to be alerted for the final ascent.



Fixed SMB



The standard SMB at the University of Plymouth is an aluminium pole passed through a rigid red plastic ball which provides buoyancy.

At the top of the pole is a code Alpha flag indicating underwater operations. The pole height assists with diver monitoring in choppy conditions.

The base of the pole offers a ring for the attachment of the reel line.

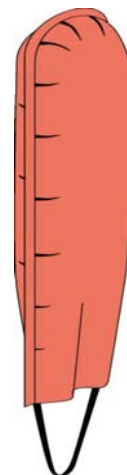
During night diving a light stick is fastened to the top of the pole.

For ease of identification of individual divers the SMB poles are coloured or banded.

Other fixed SMBs may be circular or tube shaped but should have a sealed air supply.

The best colour providing the highest visibility is a bright red/orange.

Delayed SMB



The delayed SMB is generally of a very compact nature and conveniently Carried either in a Stab jacket pocket or attached to external equipment designed for the purpose.

As the system is designed to be inflated underwater the float needs to have a mechanism for release of over pressured gases. This may be as simple as an open end to the floatation tube marker or a side mounted dump valve.



The open ended tube system often is supplied with a weighting at the mouth of the tube.

Floats designed to retain their air have a one way closure system at the open end which becomes self sealing once air is admitted. By applying Boyles Law to the float as it ascends from depth is easy to understand the need for a dump valve.

Both open and sealed floatation tubes require gas to be added to them from the diver's supply. This would best be performed from a redundant source rather than the main supply and using an alternative means of filling rather than the primary regulator.

There is a type of DSMB which has it's own air supply in a small cylinder. This extra equipment will add to the weight of the system and it will require charging in the normal way prior to a dive.

As air will be released rapidly into the float, this system is best securely anchored at depth prior to inflation.

Note the dump valve situated adjacent to the inflation inlet.



The simplest form of a Delayed SMB comes in the form of a piece of emergency equipment consisting of an inflatable tube with ten metres of line attached to a weight.

The line is carefully wound around the weight. The marker tube is wound into a cylinder shape and stored with the weight attached as shown. The system is small and light enough to be carried in a stab jacket pocket and is to provide the diver with an emergency means of surface cover.

The weighted line is first deployed prior to inflation of the marker.





Using a Surface Marker Buoy

It is important to control a surface marker buoy throughout a dive, taking particular care to ensure that the marker remains on the surface and is not taken diving with you.

This control is essential during ascent when several factors may come into play.

These may include personal buoyancy control, monitoring speed of ascent, checking buddy, communication with topside as well as possibly recovering task tools.

However topside is only aware of your position by the position of the SMB. Consequently the best position for you is directly under the SMB especially when there is a large amount of surface traffic.

