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SETTING UP SHROUDS WITH DEADEYES AND LANYARDS

HOW TO RIG DEADEYES & LANYARDS

Extracted from Hervey Garrett Smith, "The Arts of the Sailor"

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Although this ancient art of the rigger is considered obsolete by many present-day yachtsmen, such is far from true, for deadeyes and lanyards are still being used in all manner of sailing craft, being particularly appropriate in the traditional types-such as the Friendship sloops, the Chesapeake bugeyes, or the skipjacks. While their salty, old-fashioned appearance may have been the factor that has induced more than one sentimental yachtsman to adopt them, from the standpoint of practicability they have sufficient merit in their own right to justify their use in any craft of a suitable type.

There are two reasons why I feel some discussion of this uncommon art is in order: in the first place, specific, authentic information on the subject is not within easy reach of everyone, and secondly, there is a great deal of misunderstanding as to their practical application in the modern yacht.

The principal advantage gained by setting up standing rigging with lanyards is elasticity. This is particularly desirable in yachts that are broad of beam, having high initial stability, and heavily sparred. The resiliency of such a rig makes a yacht easy on her gear, for spars and rigging can flex and give with every sudden strain.

This elasticity of lanyards is so well known that it has led to the false assumption that they have to be continually set up to take up the stretch, and are therefore

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a constant nuisance. This is definitely not true. Like all fiber ropes, lanyards do have a certain amount of initial stretch when new, and during the first season it might be necessary to set them up twice; but once the initial stretch is worked out and they have "found themselves," they become completely stable and require attention only infrequently.

Lanyard stuff is 3-strand tarred hemp, and can still be had from the better rope manufacturers. Once the lanyards are installed they require yearly re-tarring to keep the weather out and prevent rot, and if they are properly cared for they will last for many years. I have found that when you mention "tar" the average person thinks of the solidified coal tar that must be melted for use. The tar used for lanyards, as well as other shipboard use, is a thin, liquid pine oil, and is obtainable from various makers of marine paints. Fishermen tar their nets with pine tar, and the thinnest grade is used on wooden decks in place of paint.

What I am here concerned with is the proper method of reeving, setting up, securing and maintenance of the lanyards; a method developed through centuries of experience and therefore admitting no deviation. Professional riggers of the old school would insist that there is but one way to rig lanyards, since no one has devised a better one. Such are the dictates of tradition.

The standing end of the lanyard must have a knot, and the proper lanyard knot is the Matthew Walker (Fig. 1.1.) If you will examine an upper deadeye you will see that the left hand hole has a sharp edge to support the lanyard knot, while the other two holes are gouged out or faired to take the lanyard without chafing. Lanyards are always rove right-handed, as rope is coiled. The lanyard knot is at the inboard side of the left hand hole in the upper deadeye. (Fig. 2.1.) Thus the knot is at the forward side of the starboard deadeyes, and at the after side of the port deadeyes. When the lanyard has been properly rove off the working end will emerge from right hand hole of the lower deadeye. It is then brought up and secured to the shroud close to the upper deadeye with a Lanyard Hitch, known to some as the Cow Hitch, as shown in Fig. 1.2. The end is now brought down and secured to the standing part with 3 round seizings.

But before the lanyard can be secured with the hitch and the seizings it must be set up to get the required tension in the shroud. Bare hands alone will not do the job, and a tackle must be used. Greasing the lanyard and the holes beforehand is advisable as it makes the lanyard render through the deadeyes easily and reduces the friction, which is quite considerable. For a tackle use a single purchase (2 single blocks).

Middle a short piece of rope and secure it to the shroud as high up as you can reach with a Rolling Hitch, and to this strop, hook the upper block of the tackle. Bend the end of the lanyard to the hook of the lower block with a Becket Hitch. (Fig. 1.3.) Now haul away on your tackle until the shroud has the desired tension, and while you hold all your gain have a helper put several temporary seizings on the standing parts to prevent the lanyard from slipping. Then cast off your tackle and secure the lanyard with the hitch and the permanent seizings. (Fig. 1.4.)

This is the traditional way of setting up lanyards, and the only variations are in the arrangement of the tackle, large vessels requiring a more complicated system of greater power.

When deadeyes and lanyards are used, the standing rigging is generally galvanised iron or plow steel, parcelled and served throughout its length. All shrouds on a side should be the same length; that is, the upper deadeyes must be perfectly aligned, the same height from the deck. Sheer poles -- iron rods about 1/2 inch in diameter -- are generally secured to the shroud doublings at the upper deadeyes with flat seizings, to tie the whole works together and keep the deadeyes neatly in line. Very often the sheer poles are eliminated and a wooden member called a pin rack, about 2 by 3 inches for a yacht under 45 feet, is bolted to the shrouds just above the deadeyes and bored to take belaying pins. This is a very handy arrangement for gaff-rigged yachts that do not have a pin rail around the mast, as it keeps the coils of running rigging off the deck and out of the way.

To restate the case for deadeyes and lanyards, they are entirely practical providing the yacht is of a suitable type of hull and rig. Obviously they would look rather silly on a racing sloop such as a 6-metre or International, but they are very appropriate for a gaff-rigged, heavily built cruising yacht of a traditional hull type, for they have a character in keeping with such a craft. The elasticity of lanyards is very noticeable when sailing close-hauled in rough weather in a burdensome yacht that is stiff on her feet. You can actually feel the flexing of the whole rig---quite distinct from the jarring snap one usually expects, and if you should go aloft you would discover that the lanyards are actually a sort of sea-going shock absorbers. All in all, they are a comfortable, dependable, and durable type of rig. Most important of all, their aesthetic value is known and appreciated by every sailor who has romance in his heart. And don't we all?

HOW TO RIG DEADEYES & LANYARDS

Extracted from Hervey Garrett Smith, "The Marlinspike Sailor"
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Reverting to a rigging detail usually associated with a bygone era is generally done, I suspect, for sentimental reasons, but deadeyes and lanyards are entirely practical today. On gaff rigged yachts they are resilient, easy on the spars and rigging, and their elasticity is quite noticeable. They give under sudden strains and bad weather, and in times of stress (God forbid !) are quickly cut away. Most objections to their use by the uninformed stem from a mistaken idea that lanyards stretch abominably. This is definitely not so. New lanyards when first set up will take a month or so of sailing to get the stretch out, but after that they are quite stable provided they are properly tarred. Keep the weather out and you will have no trouble.

Deadeyes and lanyards are seen but seldom nowadays, having been supplanted by the more easily obtained turnbuckles. Deadeyes have long since disappeared from the marine hardware catalogues and are obtainable only on special order, if at all. Yachtsmen wishing to convert to the old fashioned rig will probably make their own, in which case something more than a photograph of an old square rigger will be needed.

Cooking the deadeyes in hot linseed oil for several hours will help prevent checking and make them weatherproof.

Notice that the left hole, at the inboard side where the lanyard knot is tied, is left sharp edged, but elsewhere the holes are faired or softened by means of a groove cut with a gouge. Notice also the groove in the edge of the deadeye to take the parceled and served wire shroud.

There are several ways to turn in the shrouds. They may be spliced around the deadeye as shown here, or the square rigger method of a large round seizing and two flat seizings may be used. Another way is to put a thimble splice in the end of the shroud, and by using a strap identical with the one on the lower deadeye, it may be bolted to the upper deadeye.

The lower deadeyes must be strapped to receive the chainplates. Store bought deadeyes come grooved to take a round strap with forged eyes, but a flat strap can be bent and bored for the bolt more easily and cheaply. The chainplate can be bent to form an eye and riveted or brazed.

Lanyards should be three strand tarred Italian hemp, the same diameter as the wire shroud, and can be obtained from any sailmaker. The lanyard knot may be a three strand Matthew Walker, the strands laid up and seized at the top as shown.

Lanyards are always rove right handed, as rope is coiled, with the knot placed at the inboard side of the left hand hole of the upper deadeye. This brings the knots on the forward side of the starboard deadeyes, and the after side of the port deadeyes.

When the working end of the lanyard has been rove through the last hole (right side of lower deadeye), it is brought up and cow hitched to the shroud, and the end is brought down and seized three times between two standing parts, as I have shown in the first illustration.

Setting up the rigging is simple. A tackle (single purchase will do) is secured to the shroud as high as you can reach with a rolling hitch. The lanyard and the holes in the deadeyes are well greased and the lanyard is bent to the hook of the lower block with a becket hitch. Haul away on your tackle until the shroud has the desired tension and hold your gain while a helper seizes (temporarily) the standing parts of the lanyard together. Then cast off from your tackle and secure the lanyard end as previously described.

Where there is more than one shroud to a side, sheer poles are lashed inboard of the upper deadeyes as shown. They may be made of half inch galvanised iron rod, painted black, and served to align the deadeyes. Then tie the whole assembly together.

When all has been lined up satisfactorily the lanyards should be well tarred for weather protection, and retarded yearly. Lanyards so treated and well cared for will be good for many years of service, getting stiffer as they age, but none the less strong.

STANDING RIGGING

Extracted from John Leather, "The Gaff Rig Handbook"
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Like all things nautical the design of gaff rigging must be largely based on experience and a clear understanding of a vessel's purpose. There has been a tendency in recent years to reduce the sizes of rigging of bermudian rigged cruisers to racing yacht standards, but this trend should be treated with caution when rigging a gaff boat which usually needs heavier rigging to absorb strains differing from bermudian rig. Adequate strength of rigging must be equated against weight and these are two conflicting requirements in rigging any sailing craft, where every pound saved aloft increases sail carrying power and stability. Most cruising yachts' rigging is designed or fitted with ample strength, but often with little regard for weight. However, the greater the diameter of a wire rope the more resistant it seems to be to deterioration, and this is often a contributory factor to the apparently excessive size of standing rigging in traditional craft.

SHROUDS

The majority of present-day gaff rigged yachts require only two lower shrouds on each side, fitted to the mast close above the position of the gaff jaws when the full mainsail is set. Their lower ends are usually attached to chainplates located just forward and aft of the masts' centerline at deck. Craft not fitted with backstays, and most ex-working craft, have the forward chainplate abreast the mast, and the others spaced well aft to give the best support possible without restricting the boom too much when off the wind. When designing a rig the combined strength of the lower shrouds fitted on one side of the yacht should be made equivalent to the displacement of the yacht, plus a factor of, say, 25 per cent of the displacement.

There are three principal methods of attaching shrouds to a mast --

1. By shackling to a mastband or tang.
2. By passing a single eye over the masthead and settling it on a wood bolster on the hounds cheeks.
3. By fitting the shrouds in pairs formed by a wire passing up from the lower eye, round the masthead on the bolster, and down to the next lower eye on the same side. The upper eye is then formed by seizing the parts of the wire together with wire, close under the bolster.

The first method is obvious, but has always been rather unusual in gaff rigged craft, although the second and third are still common.

The single eye is the surest traditional method of attachment. The eye spliced in the shroud should be one and a quarter times the circumference of the mast at the hounds, and should be well served. In large craft it was often further protected by leather sewn around it. There is a recognised order in which single-eye shrouds are placed over the masthead: the eye of the starboard fore shroud is positioned first; then the port fore shroud (which is made longer by twice the diameter of the shroud wire); followed by the second starboard shroud (the allowance being four times the wire diameter), and last the second port shroud with an addition of six times the diameter of the wire. The forestay is fitted last, over the shrouds, and its arrangement will be discussed later.

The use of paired shrouds was common in working craft and many yachts until seventy years ago, but it is now rarely used. Its advantage lies in reducing the number of eyes and weight aloft. However, if the wire seizing parts, the shrouds are slackened, or if one of the lanyards or rigging screws breaks, the additional strain might part the seizing and leave the mast unsupported on that side. A common use for this method was to form the second pair of shrouds when three were fitted on each side, the forward shrouds having a single eye. If four shrouds were fitted on each side in large craft, they were usually two pairs, as it was very unlikely that both would be disabled at the same time.

The length of shrouds is measured from the top of the bolster to the eye or deadeye, or from eye to eye if shackled at each end. When measuring from a plan for new shrouds the true length must always be obtained, and any shrouds attaching to chainplates positioned forward or aft of the centralise of the mast must not be measured from the elevation of the rigging plan. The actual offset from the centre of the mast in plan view, to the chainplate, must be set out in conjunction with the height to the point of the mast attachment and the true length obtained, otherwise the shrouds will be short. If deadeyes are fitted the eye at the lower end of the shroud should be one and an eighth times the circumference of the deadeye to allow its replacement, if required. Traditionally, the eyes of rigging were covered by parcelling and serving with spun-yarn, covering with canvas and painting, or covering with leather. The first is still common, but the others have largely gone out of use as they were principally necessary in large craft. If a yacht's shrouds are fitted with lanyards, or deadeyes and lanyards, they should be set up in the order of fitting the shrouds over the masthead; always commencing with the starboard fore shroud.

DEADEYES AND LANYARDS

The traditional method of supporting the standing rigging of sizeable working craft and yachts is by tarred hemp rope lanyards set up between circular lignum vitae deadeyes fitted at the lower end of the shrouds, and similar deadeyes attached to the chainplates. Deadeyes and lanyards look natural in working craft, but in all except very large yachts they have a slightly theatrical appearance and a rigging screw will

do the work better. However, a slight advantage of the use of rope lanyards instead of rigging screws in larger sailing craft is that they distribute strain evenly between two or more shrouds. If one is set up too tightly there is usually sufficient stretch in the lanyard to transfer some of the strain to the slacker one.

The rim of the deadeye is grooved all round, allowing the shroud wire to be placed tightly round it, before being seized back on itself above the deadeye. The lower deadeyes are attached to the chainplates by an iron hoop of circular section which is either bolted to the chainplate or, sometimes, shackled to the end of the chain lanyard which is fitted to allow the deadeye to be positioned above the rail. Deadeyes for small craft such as yachts and smacks usually had three holes for lanyards. Below the holes the wood is faired, allowing the lanyard to lay fair around it.

Only the best tarred hemp was used for lanyards or, in later years, in some commercial craft and racing yachts, flexible steel wire rope. Hemp lanyards should be well stretched before use and given a slippery coating of tallow where they are to render through the deadeyes. A Matthew Walker or wall knot is made in one end and the other rove out through the forward hole in the upper deadeye, in through the forward hole of the lower deadeye, then out through the centre hole of the upper deadeye; following on until the hauling part is passed through the aftermost hole in the lower deadeye, when it is set up with a purchase to tauten all parts. Sometimes it is necessary to set up the lanyard as work progresses and this is usually done by taking the parts leading up from the lower deadeye and tailing them on to the throat halliard to obtain a strong purchase. When the parts have settled, and this takes time with new rope, the hauling part is secured to the next part by a racking seizing (Fig. 3.1) after which it is taken up between the eye of the shroud wire and the top of the deadeye; passed round behind the shroud eye; and brought in again between the shroud wire and the top of the deadeye. A purchase is again applied to the fall and, when set up, a racking seizing secures it to the adjacent part. Sometimes this fall is not passed through the shroud eye, but instead, two half-hitches are taken round the shroud, and the fall seized to another part, as described above. It is possible for the fall of the lanyard to be made fast by two turns and seized round the eye of the shroud.

The Matthew Walker knot has been known to part under the strain in large gaff-rigged craft and by the end of the 19th century many yachts were adopting the system of splicing a thimble eye in one end of the lanyard in place of the knot, and this shackled to an eyebolt in the channel, just ahead of the chainplate. (Fig 3.2.) The other end of the lanyard is rove out through the forward hole in the upper deadeye and continuing as previously described. As this method introduces another part, additional care is required to set it up and it may be necessary to set up say three parts with a tackle and seize them to each other, before continuing to reeve off the remaining parts.

The racking seizing used is made with light rope, varying in length from 2 - 3 feet in a large yacht to 1ft 6in to 2ft in small, making a running eye at the top of the seizing

and passing the other end in and out between the two parts to be seized. The seizing is then pushed together and the end secured.

If flexible steel wire is used for lanyards it is usual to splice one end to the shroud above the deadeye, in place of the Matthew Walker knot. The other end is passed through the deadeye and the fall finished off, as for rope. The supple pre-stretched synthetic rope appears to be ideal for lanyards, except that it tends to be very slippery even in the stapled varieties, and seizings to the shrouds or other parts tend to draw. However, with care it can be satisfactory. It is desirable to heat the stopper knot to secure it from pulling apart.

Sheerpoles, also in the past called sheerbattens or sheer stretchers, are often fitted across the shrouds just above the deadeyes or rigging screws. They are seized to the shrouds and prevent them untwisting under strain. Where deadeyes and lanyards are used the sheerpole should be fitted before these are rove and set up as the finishing hitches of the fall must be made above them. Sheerpoles may be of hardwood or metal. Wooden ones are often favoured on traditional types, sometimes with a vertical belaying pin between each shroud, to which halliards and lifts can be made fast.

When rigging was universally set up with lanyards, slack rigging was often held to be a factor assisting speed and many tales were told of the fortunes of racing yachts being radically altered when the standing rigging was slacked off. It seems there was no advantage in this practice, and logic demands that if standing rigging is thought necessary to support a mast it should be set up as tight as possible, though the present fashion of bending masts and rigs perhaps strengthens the theory of the old skippers. My own view is that standing rigging should be set up tightly, but not so tight that it might strain the boat's construction, which is quite possible with overtaut rigging screws. By the 1890s rigging screws had superseded deadeyes and lanyards in racing yachts and, though they lingered in cruising yachts and working craft for many years, and are still sometimes seen, the rigging screws' ease of operation and finer adjustment is greatly superior.

RATLINES

Traditionally, ratlines or ropes seized between two or more shrouds to form a ladder up the rigging, were only fitted in a few English fore-and-aft rigged craft, except those setting squaresails. Most were arranged to be worked from the deck and, if anything needed doing aloft, a hand went up the mast hoops if the mainsail was set, or up with legs between the shrouds if it was not; and with a gantline or the topmast halliard he could reach the topmast head. However, where there was considerable work aloft, such as in large yachts and trading craft, one pair of shrouds on each side were usually fitted with ratlines.

Like deadeyes and lanyards these now have rather a theatrical appearance, but can be genuinely useful in larger craft, though they are often mistakenly added to small vessels, to the detriment of windward performance and appearance. Rope ratlines must be fitted in a certain way to remain reasonably taut and effective, and nothing

looks worse than ratlines hanging slack or askew. They should be attached to the shrouds by a racking seizing or, if fitted over three shrouds, they may be clove-hitched to the middle one. If the shroud wire is of small diameter or smooth finish, the seizing should be done over insulating tape.

Hardwood battens are sometimes fitted as ratlines but they chafe the mainsail before the wind and their weight and windage are considerable.

NOTE

The method of reeving the lanyard differs between these two writers. We prefer that described by Smith.

