

# GP14 REEFING SYSTEMS

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This paper describes simple and practical ways to reef the genoa and mainsail on a GP14 dinghy. With the systems described the boat can be reefed whilst at sea, and these systems represent a practical way to extend your safe and enjoyable sailing over a wider range of wind and weather conditions.

In stronger winds, or with young children or lighter or less able crews, use appropriately sized sails for the circumstances (especially foresail). In that context, note that a cleated genoa, caught aback by a sudden vicious windshift, on its own (even with the main fully released) is large enough to capsize a GP14 in a stiff breeze if the crew is not quick enough to release it; it has happened to me!!

Note that specified sail sizes are maxima, and there is no minimum. When the boat was originally designed the normal sail material was cotton, which was more porous to wind than modern synthetics, the jib was small, and the mainsail shape was less powerful than now. Modern synthetic fibre sails are significantly more powerful. Remember that the standard jib is still available at its original size and is a practical and useful alternative to the current genoa.

Historically the original design envisaged the boat as a “Family Fourteen”, typically being sailed by parents plus two children. A comparatively modest headsail was specified (a sail that we now know as the standard jib) in deference to the perceived limited strength and to the perceived anxieties of “Mum”. Several contemporary photos, and more modern photos of vintage boats, also suggest that early mainsails had far less roach than modern ones (see next page).

Alternative smaller sails (for both) are appropriate in moderate winds and upwards, either purpose-made or sails originally made for a smaller class (e.g. Heron) and bought secondhand.

If you are caught out in stronger winds and with no means of reefing, it is worth dropping one or other sail. A GP14 can, if necessary, be sailed on any point of sailing under either mainsail or genoa alone; in particular she will go to windward under either the main alone or the genoa alone, but not particularly well, and you will have some modest problems of balance.

However a vastly better alternative to permanently smaller sails, or sailing home on only one sail, is a means of reefing, preferably for both sails. It is also basic good seamanship to be able to select suitable sail area for the conditions, and it extends the range of wind strengths in which sailing is both viable and enjoyable.

But what is vastly more important than merely extending the range of wind strengths in which one may choose to sail is safety; the ability to reef while at sea will help to keep the boat and her occupants safe if unexpectedly caught out by increasing winds.

That can increase in wind indeed happen unexpectedly. The three most extreme examples in my personal experience happened over a span of perhaps 55 years, even just the last two being nine years apart. The middle one was in August 2009, when the GP14 cruising fleet were caught out in a sudden force 7/8, independently documented by the local lifeboat station the following day, off a major Anglesey headland, on a forecast of only force 3; Moelfre Lifeboat had eleven calls that afternoon, over a distance from Benllech to the Skerries. The third was in Peel, Isle of Man, in

August 2018, when a morning which started off idyllic was rudely interrupted by a force 9 weather bomb, bad enough to have cancelled the Isle of Man ferry service; but with better forecasting by then we had a few hours notice that this was coming. (The first case was many decades earlier, back in the early sixties, in my student days, sailing a Firefly on the Menai Strait in December.)

The ideal solution is to have the means of reefing both sails, quickly and easily, and above all safely and reliably. It is most important that it should be possible to reef while at sea; that is where it is needed, and a system which can be reefed only while ashore is of little practical use and completely fails to provide a safety margin if caught out at sea in increasing winds.

### **Photos of earlier versions of the rig**



*Christabel, Ullswater, 1966*



*“Tantrum”, Porthmadog, 1968*

*Three photos of the original rig, with cotton sails and the comparatively modest headsail (below, and above left), plus one (above right) with early terylenes, including genoa; and all with very little roach to the main.*

*All three boats owned at the time of the photos by the author.*



*“Snowgoose”; very early vintage boat built 1951, photo 2009*



*Michael Hill with his famed revolutionary rig on "Trostan".  
National Championships, Thorpe Bay, 1968.  
Terylene sails, genoa, and phenomenal mast bend (for that time);  
this boat famously set the modern trend for bendy masts,  
even though those early masts were specifically designed to be stiff.*

*But note that even then there was still very little roach on the mainsails (on any of the boats).*

**After the provision of boat buoyancy and personal buoyancy aids or lifejackets, an effective means of reefing is possibly the single most important safety provision in a sailing dinghy.**

A means of reefing does of course vie for this accolade with a handful of other vitally important safety items, and many cruising sailors (myself included) would normally regard all of them as essential for safety:

1. Anchor, and suitable rode (rope, or - better - rope plus chain)
2. Oars or other means of emergency propulsion
3. Sharp efficient knife
4. Simple tools, spare shackles, cordage, etc., to facilitate jury repairs
5. Means of summoning assistance in event of distress (i.e. flares and/or VHF and/or EPIRB/PLB)

# Reefing in Summary

## Headsail

The easiest way of reefing the headsail is roller reefing, and this is so quick and easy that it can be done in seconds; ease the sheet, and it is then just one line to pull, and drop it into a jam cleat. And the reverse when you want to “unreef”. I normally sail with a genoa, even when single-handed, and my first reefing step is always to reef the genoa; I tend to do this as soon as I find that I am regularly spilling wind from the main. Very often this alone is sufficient to ease the boat dramatically, and adjusting it is so quick and easy that I will very often alter it several times in the course of a single passage, as the wind strength varies or as our course changes in relation to the wind. Details appear later in this paper.

## Mainsail

Sail area should be reduced firstly by reefing the genoa, due to the speed and convenience of its roller reefing. If conditions dictate further reduction in sail area, reefing the mainsail will further reduce the power in the sails and balance the rudder better when sailing with a reefed genoa.

The systems described below allow for progressive mainsail reefing, either by a freely chosen amount or in two distinct stages (depending on the system used). This is achieved by losing sail area along the foot through partially lowering the sail, either gathering the loose foot along the boom or rolling the sail around the boom, and then re-tensioning the halyard.

As well as reducing the sail area this lowers the sailplan, which reduces the heeling leverage that the sailplan exerts on the hull. So by reducing both the factors which determine the heeling moment it is particularly effective in making the boat more controllable.

My recommendation for sequence of reefing in increasingly windy conditions is:

- Genoa partially reefed on headsail roller
- Main reefed to boom down to stage 1
- Genoa reefed further
- Mainsail reefed to boom down to stage 2.
- Genoa reefed yet further, to spitfire jib size
- Mainsail taken right off

That has been demonstrated to be sailable up to the beginnings of force 8 in a tide rip and overfalls. If the conditions are so very extreme that you need to reduce even further then you really shouldn't be out in it; and it may then be time to drop everything, improvise a sea anchor, and radio for the lifeboat!

In the next sections I describe the ways of rigging the boat to provide suitable fittings to make reefing reliable and practical.

## **Mainsail Reefing - Details**

The basic requirements of a mainsail reefing system are that the sail area can be reduced and that the sheeting system (and ideally also the kicking strap) will continue to work in order to control the sail.

It is almost equally important that the reefed sail should still be an efficient shape, and as flat as possible; a big ungainly bag of a sail loses forward drive and increases heeling moment, the exact opposite of the very characteristics which you need to achieve.

There are two generic systems which between them almost monopolise the gear used on dinghies; square gooseneck roller reefing and slab reefing, the latter also being known as jiffy reefing. (See footnote on page 31 for alternative systems used on a small minority of dinghies, and also yachts, but not GP14s.)

Either is acceptable, but in either case **it is vitally important that the system be really well thought out and set up.** In both cases, if well designed and correctly set up, they are excellent systems, and although slab reefing is significantly the better of the two a really good roller reefing system can still work well. Either of them, if badly designed or set up, is virtually unusable at sea - which is where it most matters.

Apparently minor details can make the world of difference to whether reefing operations, either pulling down or shaking out reefs, can be done easily at sea, or whether they can only realistically be done while ashore.

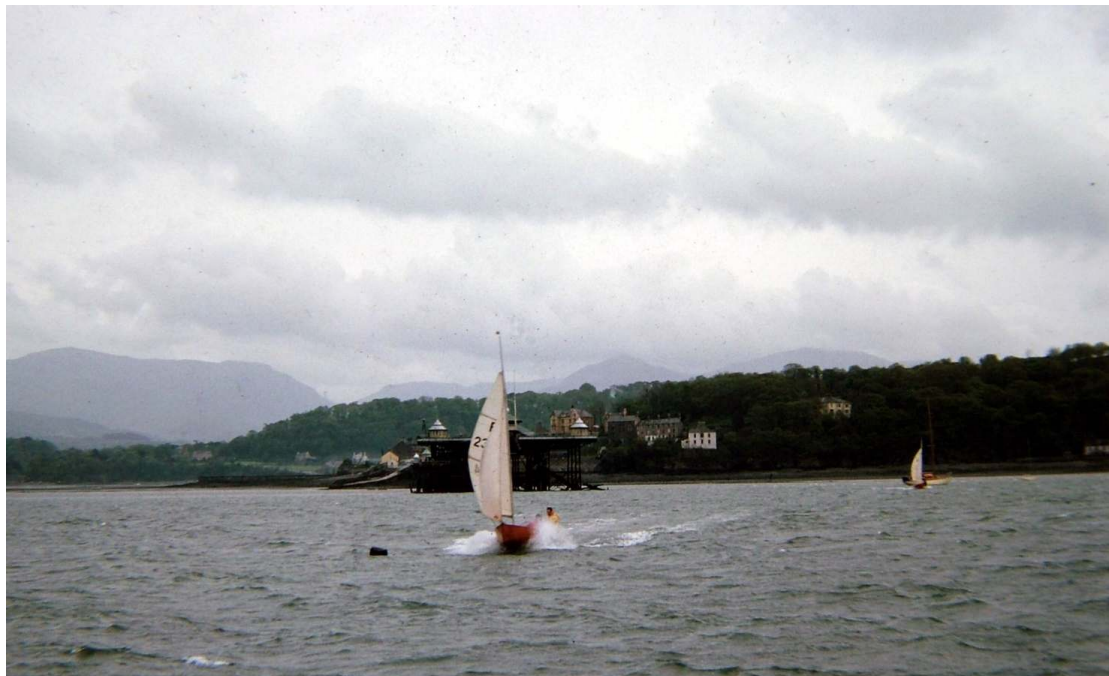
### **Square Gooseneck Roller Reefing**

This is a historic system, and may now be regarded as outdated, but it is what the boat was originally designed with.

Indeed the vast majority of sailing dinghies were designed with this system, and equipped with it as standard, both at the time the GP14 was designed and for perhaps the next twenty years afterwards. It may perhaps come as a surprise to some of today's race-oriented sailors to learn that when these boats were designed it was almost an axiom that any serious sailing dinghy **would always** be equipped with a means of reefing; that was the standard expectation of the day.

It may be even more of a surprise to today's racing sailors to learn that 50 and more years ago it was not unusual for reefing to be routinely used when racing in stronger winds, and even on occasions for compulsory reefs to be ordered by the OOD (Race Officer). Certainly when I was racing Fireflies in university competition - which then, as now, was very highly competitive, and of at least a National Championship standard - it was commonplace for a compulsory six rolls to be ordered when sailing in near-gale conditions.

This photo shows a university match on 1<sup>st</sup> May 1964, and the leading Firefly (helmed by our own Club Champion, Mick Rhodes) has a 100 yard lead over the second boat; that was not unusual when Mick was sailing, and since he had been known to win individual races in the National Championships of the class it is clear that he was what we would call today a Gold Fleet sailor. Note the boat plumb upright, the bow wave like that of a speed boat, and the main very clearly reefed.



*Photo: Jane Bowles*

Alright, not a GP14, but nonetheless a thoroughbred racing dinghy, so the precedent is there.

**However this writer feels that slab/jiffy reefing is so significantly better than the square gooseneck roller reefing system that the details of roller reefing are now placed at the end of this paper, as Appendix 2.**

### **Slab or Jiffy Reefing for the Mainsail**

This is the modern system, and this writer is now convinced that it is by far the best currently available system; it is quick and easy to pull down a reef at sea, or to shake the reef out, it allows the kicker to operate in the normal way, and if properly set up it gives excellent control of the shape of the sail - with no bagginess.

For slab reefing additional clew and tack cringles are built into the luff and leach of the mainsail, with appropriate reinforcing patches, together with (usually) a horizontal row of smaller eyes (called reef points) between each pair of cringles, also with appropriate (smaller) reinforcing patches. These cringles are positioned so that the line between luff and leach cringles is approximately parallel to the foot. It is a comparatively minor job for a sailmaker to add these fittings, and it may be done at the time of making a new sail, or they may be retrospectively fitted to an existing one.

Reefing is achieved by lowering the sail so that the first pair of extra eyes lie close to the boom and form the new tack and clew of the reefed sail. By having two pairs of extra eyes, at different heights from the foot, two stages of reefing can be provided. The vertical distance from the full sail tack or clew position and the first and second reef eyes is called the depth of the reef.

It is fair to say that **there is no consensus on how deep the reef points should be.** When I bought a Series 1 boat in autumn 2004 I was surprised just how deep the first reef was, but having used this sail on two GP14s over the next two seasons I was sufficiently happy with it to order exactly the same depths when I ordered my brand new cruising sails for my then new boat. Now, after a grand total of (I think) twelve seasons (between the two boats) before I decided to retire from dinghy sailing and passed the new boat over to my godson, I am still entirely happy with those depths of reef.

The rationale for a fairly deep reef is that, if the need for reefing arises and one is not racing, there is no pressure to reef to the absolute minimum that you can get away with in order to maximize boat speed. Provided you don't kill all performance (and my experience over twelve seasons is that this doesn't - indeed I have even been known to lead the fleet to windward while reefed) it is far better to reef to a generous amount so that you have a safer and more comfortable sail, and with a good chance that you may not have to reef again if the wind freshens further.

The vertical heights of my reef points, measured from the bottom of the tack cringle to the bottom of the corresponding reef cringle are: **1st reef, 1475 mm; 2nd reef, 2330 mm.**

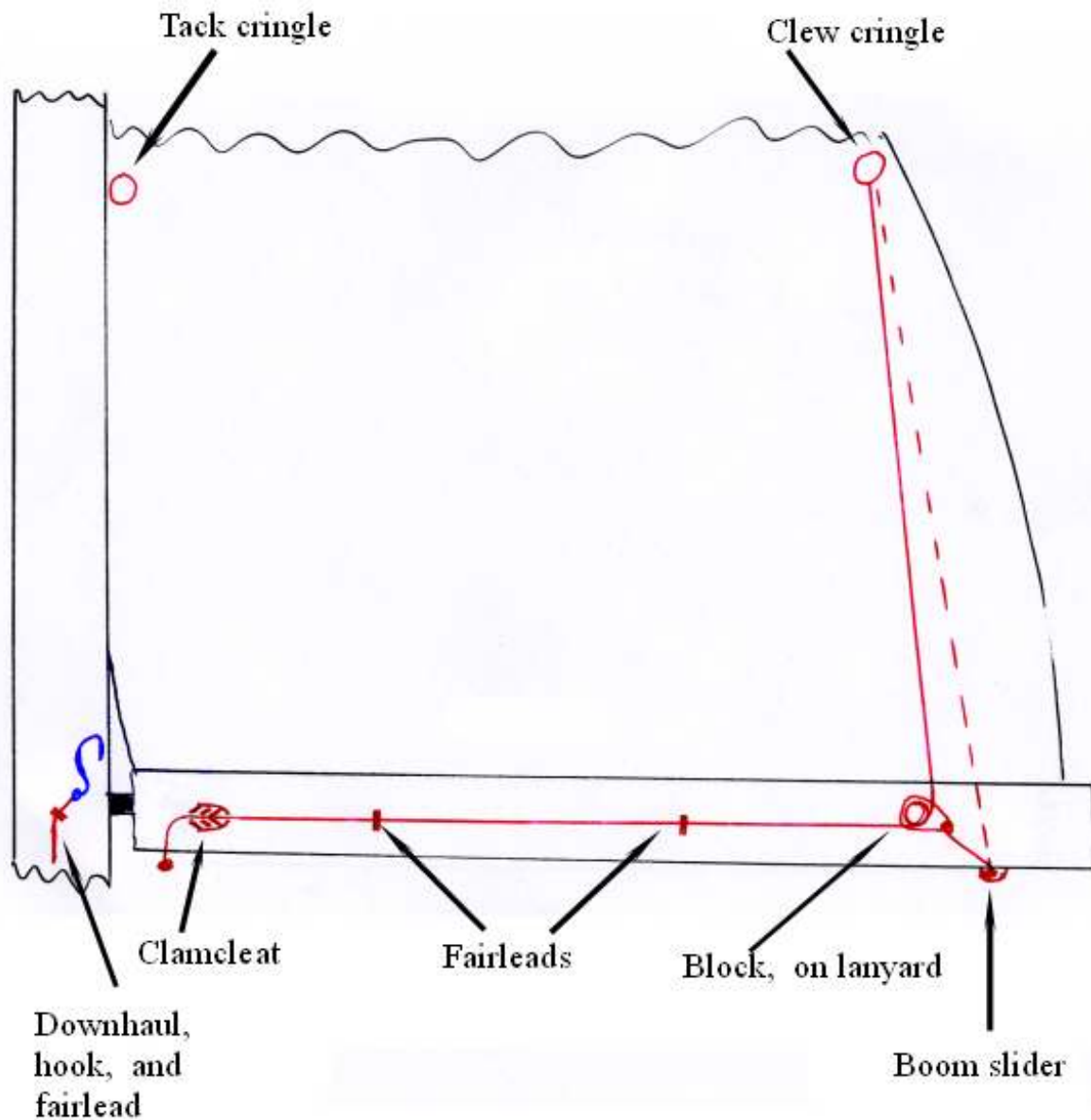
Even with my second reef pulled down and a lot of reef in the genoa, I have had my Series 2 boat planing hard when single-handing in force 5, and sailing fully crewed with the same degree of reef I have had my Series 1 boat planing like stink in force 7. With just the first reef, and a corresponding amount of reef in the genoa, sailing fully crewed we have had an absolutely scorching sail in my Series 2 boat in about force 5, again planing hard; and with the second reef and fully crewed, but with a novice crew, we were planning so hard on a broad reach in about force 6 that we had a close escort of a school of dolphins. It is only a pity that we were not able to photograph the dolphins; with the boat on the absolute limit of control I did not have the luxury of photography!

I have already mentioned that I have also, just once, been caught out in a completely unforecast force 7-8 off a major Anglesey headland, independently verified the following day by the local lifeboat station; and this on a forecast of only force 3! We hit it very abruptly, when we emerged from the lee of the headland, and immediately pulled down the first reef, followed almost immediately by the second, and then took stock. At that point we saw that the one single-hander in the fleet, a massively experienced cruising sailor, had capsized and inverted, so we dropped the main and stood by under reefed genoa only, and radioed for lifeboat assistance for him. Once we were relieved by the lifeboat we continued our passage. But the key point is that in a combination of gale conditions and a tide rip with overfalls, a well found GP14 equipped with the reefing system described in this paper can not only survive the conditions but remain sailable; and this was despite having a relatively inexperienced crew.

So I feel that these very deep reefs are not excessive.

Slab or jiffy reefing needs to be set up with all lines led to near the mast, and with modern rope materials the lines can be quite light but they do need to be rigged as routine on all occasions. To answer a question raised by one enquirer: when you decide that you need to reef, the wind is already outside your comfort zone; the very last thing you want to be doing is faffing around with tying down a reef out on the end of the boom which is way off to leeward, so that your weight will be on the wrong side of the boat. That is a quick way to capsize! The reefing system needs to be set up with all lines led to near the mast, so that your weight is in the middle of the boat, and preferably on the windward side of middle, when you are pulling down the reef ...

3 mm is ample for the main reefing lines (i.e. those for the clew) if you use use 3 mm Excel Pro or Dyneema line, rated at 125 kg; that line will easily take the full working load, but you will have no trouble handling such thin lines because the main load won't come onto them until after you have cleated them and resumed sailing, and the choice of Excel Pro or Dyneema will ensure that the lines don't stretch under load. However you will need to manually apply full downward tension to the downhaul before you can cleat it, so I recommend that you use 4 mm line for this to avoid the rope cutting into your hands, again Excel Pro or Dyneema, to avoid stretch.

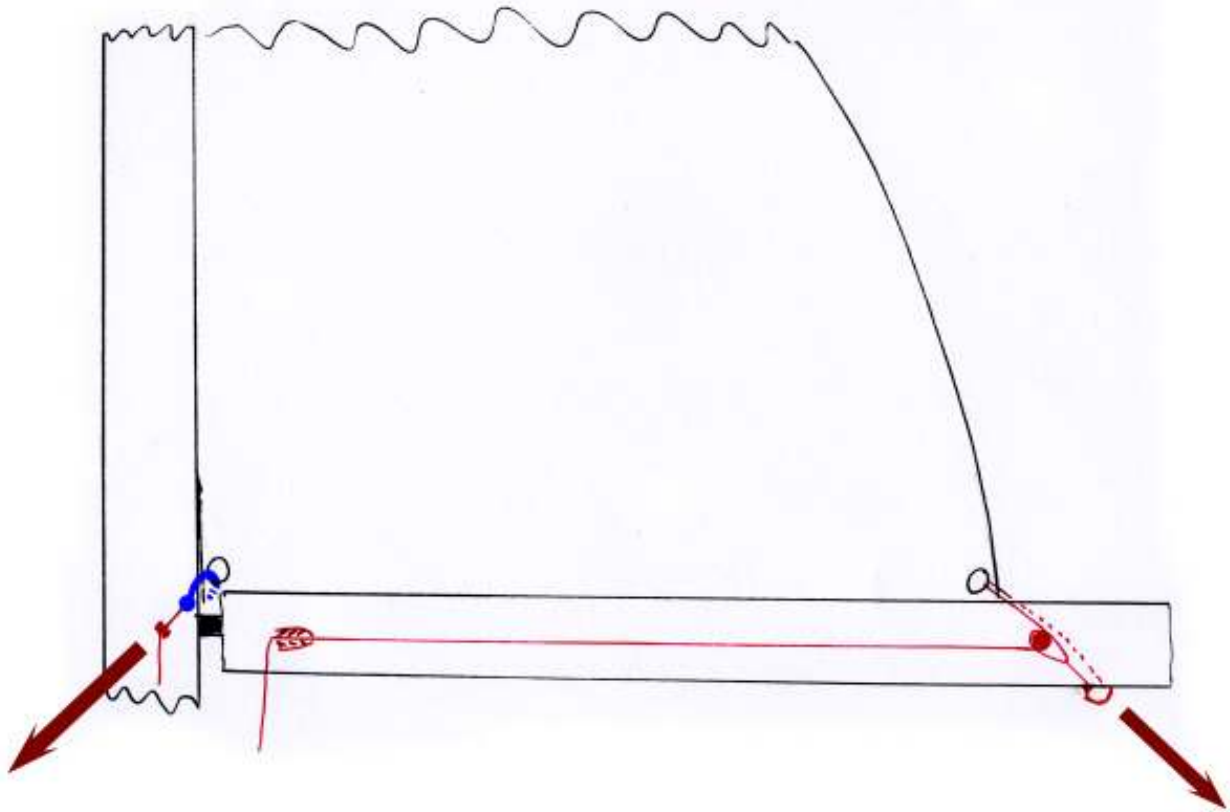


This schematic diagram (which is not to scale) shows the layout for a single reefing line, and also the tack downhaul with its fairlead and hook.

The reefing line (for the clew) is made fast at a boom slider, or other convenient point on the boom; then it passes up through the clew cringle, down through a block on the boom, and then forward to a clamcleat near the mast. The block may conveniently be a loose one, mounted on a lanyard to the boom slider, which will make it very easy to set it up in the optimum position for your particular sail. If the block is mounted in this way it should have soft (e.g. plastic) cheeks, so as not to scratch the anodizing on the boom, and the lanyard should be as short as is consistent with allowing the block to lie fairly against the side of the boom. The position of the slider, and the block, are chosen to give the optimum direction of pull to keep the cringle down on the boom and also tension the foot of the sail.

The tack downhaul leads to a clamcleat (not shown) on the mast, and serves a dual purpose. When the sail has been lowered the appropriate amount and the halliard has been cleated off, the downhaul is now used to tension the luff of the sail; since we don't have halliard winches it is much easier to apply the tension here rather than securing the tack and then tensioning the halliard. This of course corresponds to the normal practice, when setting full sail, of cleating off the halliard with the sail at the masthead and then pulling the boom downwards onto the gooseneck. It also helps to tension the foot, since the tack is pulled downwards and forwards while the clew is pulled downwards and aft; this is why the block for the clew reefing line and the fairlead for the tack downhaul need to be sited with some care, to ensure the optimum direction of pull.





This second schematic diagram shows the line of pull for the reefing line (for the clew) and the downhaul; together they need to pull both downwards, and outwards in either direction along the boom, the latter being what tensions the foot. Please note that nothing is shown on this diagram beyond what is needed to illustrate the positioning of the relevant components to achieve the required direction of pull. **Note that it is important that the reefed sail should set absolutely as flat as possible, so there needs to be plenty of horizontal component to the direction of the two parts of the line leaving the reefing cringle.**

**Set the angle of pull by experiment; start at 45° to the horizontal, certainly no steeper, but if you experience any difficulty in getting the sail really flat reduce the angle. You could probably go as shallow as 30° if necessary.**

**It vitally important to place the fittings for the clew reefing lines far enough out along the boom to give a really taut foot to the sail; at least two trainees at the first Advanced Cruising Skills course who had set up their systems from an earlier version of this paper had failed to appreciate this vital detail, and it made all the difference to how well their reefed sails set when we moved their attachment points a few inches further along the boom!**

Tidying up the bunt of the sail is traditionally done by means of reef points; lengths of light line permanently tied in their middles through a row of holes across the sail. The ends of these lines are then pulled together around the bunt of the sail, and joined by a reef knot; that is actually how that knot got its name. And that is about the only legitimate use that I can think of for that particular knot aboard a boat, but that is another matter. However on my own boat, instead of lengths of thin rope I had lengths of shockcord (a.k.a. bungee cord), with clips on the ends; so tidying up the bunt of the sail was a slightly quicker process, and the lines had merely to be clipped together instead of being tied.



*Reefing lines in place, 3 mm Dyneema or similar. These are rigged on all occasions when the boat is sailed.*



*This photo shows the blocks, with plastic cheeks, on lanyards, secured to boom sliders; pre-set the slider positions and lengths of lanyard to suit the sail.*



*Reefing lines led forward to near mast. Also showing downhaul (arrowed), led through fairlead*

**There is one other important detail; unless a topping lift is being used it is necessary to be able to temporarily disconnect the kicker, and re-connect it again afterwards. Using a snap shackle to attach it to the boom is probably the quickest and easiest way to do this, and it avoids fumbling with conventional shackles in difficult circumstances.**

On *A Capella*, for my own convenience in rigging the boat, I actually used a snap shackle at each end of the kicker. I bought a job lot of them on eBay, because they were so useful, and such good value; but I was advised (and I accepted and respected the advice) not to use one for the genoa halliard, because the load there is so high.



*Snap shackles at each end of the kicker on A Capella*



Note that the boom sliders to which the reefing lines and the lanyards for the blocks are attached should be pre-set to suit the particular sail, but once set they do not normally need to be moved. The line of pull needs to be such that the clew cringle is both held down to the boom and is pulled outwards sufficiently.

In the photos below, of the tan sail, the position of the block is not quite correct, and this is the reason for the vertical crease / bag in the sail; after shortening the lanyard to the block the sail reefed perfectly. I did at first intend to retake these two photos, after repositioning the block on the boom, but then realized that the present ones are instructive in illustrating why the positioning of the blocks is so important.

The precise positioning of the downhaul fairlead is equally vital; set it up on a calm day and try the line of pull in order to mark the exact position needed for this fairlead.

### **Reefing Procedure (if no topping lift fitted)**

- 1. Prepare by disconnecting the kicker and releasing the sheet.**

Then,

- 2. Pull in the (clew) reefing line, allowing the boom to go skywards**
- 3. Ease the halliard to lower the sail until the boom is horizontal again and the tack cringle is a little above the boom, then cleat the halliard.**

That is all that is essential, and it is very quick and easy, and if necessary the boat can immediately be sailed in this condition. Then, at leisure;

- 4. Hook on the tack downhaul and tension it.**
- 5. Re-attach the kicker**
- 6. Tidy up the bunt of the sail along the boom**

How far above the boom the tack cringle should be when you cleat the halliard depends on the elasticity of your sail; I suggest that you try it first at a couple of inches. The aim is that when you tension the downhaul the cringle will come down to the boom, and the luff will be taut.



*Reefing procedure; **STEP 1**  
Prepare by releasing sheet and kicker, then pull in reefing line and secure it in clamcleat.*



*Reefing procedure; **STEP 2**  
Slack off halyard and pull luff downwards.  
The boat is immediately sailable in this condition.*

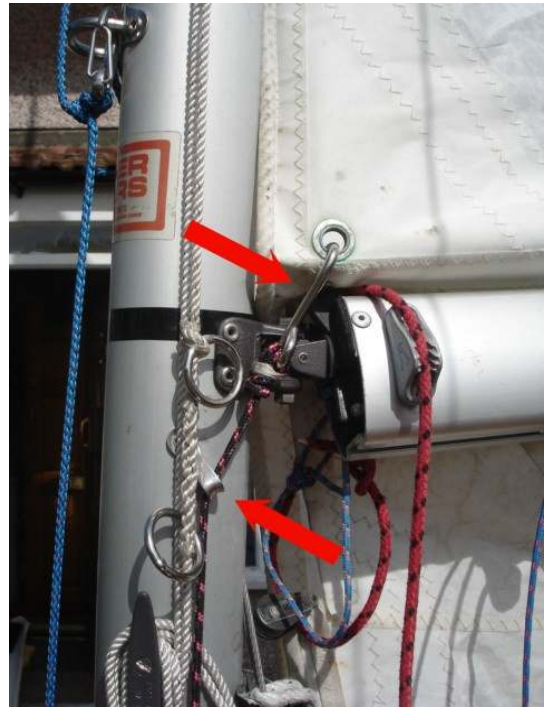
That is all that is essential, and the boat can now be sailed if necessary; total timescale to achieve this, perhaps all of 30 seconds!

Now the job can be finished at leisure.

A topping lift is not necessary if the kicker and mainsheet are released as the first step; then the reefing line is hauled tight, which will cock the boom high in the air (see photo, **STEP 1**). Then the halyard is slacked off and the luff pulled down (see photo, **STEP 2**), and at that point the job is basically done and the boat can resume sailing. Total timescale to achieve this, at sea, perhaps 30 seconds.

At comparative leisure the downhaul can be hooked on and hauled tight, and the kicker reconnected and tensioned. Tidying up the bunt of the sail is optional; most sailors prefer to tie down the bunt one way or another, and a shockcord system permanently rigged (as produced by Rob Helyar, or by Edge Sails) is possibly the easiest way of doing so, but some highly experienced sailors (such as the current President of the Dinghy Cruising Association, Roger Barnes) insist that one can safely just let it flap.

The writer's personal and GP14-specific view is that with a reasonably deep reef, just letting it flap results in an unacceptably large bunt of cloth flapping around, and at the very least it will be constrained by the kicker on one tack. With some of the more popular mainsheet arrangements (i.e. with anything at all led to the centre of the boat) this bunt of cloth will also be constrained by the mainsheet - so between sheet and kicker it will still continue to catch the wind, which rather defeats the purpose of the reef!



*At leisure, hook the downhaul into the tack cringle and tension it.*

*This serves to bring the tack into position to tension both the luff (by pulling downwards against the halliard) and the foot of the sail (by pulling forwards against the clew outhaul).*

*The right-hand photo also shows why the positioning of the fairlead is so important, to get the right direction of pull to achieve this.*



*Main and genoa both reefed,  
and nicely balanced.*

*At leisure, tidy up the bunt of the sail,  
and reattach kicker and tension it.*

*This photo was taken while the system was  
still being set up, but it is included because it  
is instructive. The position of the clew block  
needs to be re-set, a little further aft, in  
order to remove vertical creases.*

*Arguably the Genoa is arguably reefed too  
far, but right for some circumstances.*

As a further comment on the left-hand photo above, in the same season in which this photo was taken I had a week's sailing with an old friend, who described himself as "an apprentice novice" in a sailing boat. On our first day the wind was dead offshore, and blowing about force 5. In deference to the inexperience of the crew I set main only, although the genoa was hoisted but left fully furled. We had a good sail, but the return to the beach was a beat to windward, and with only the main the boat was making slow work of it, and not pointing particularly well. So we unfurled just a very little genoa, no more than the proverbial pocket handkerchief, about as much as in the photo above, and that made all the difference to the boat's ability to beat to windward effectively.

For greater convenience in both rigging and de-rigging, the reefing lines are left on the boom when de-rigging, and just untied at the fixed end and pulled out of the sail. To ensure that the boat is never unintentionally rigged without the reefing lines, the loose ends are then stowed by wrapping them around the boom. Thus it is physically impossible to bend on the sail without first doing something about the reefing lines - and if you then decide to take them off rather than rig them that is at least a deliberate decision rather than an oversight.



*(Above and below): Second reef in main, and genoa reefed to a spitfire jib size. This is a very snug rig indeed, and the writer has used it in Force 7/8.*



*Headsail in both photos of the tan sails is arguably reefed rather too much, but in practice one would adjust it while sailing, according to how the boat feels in the wind being experienced.*



## RESUMÉ

Preparation:

1. **Disconnect the kicker and release the sheet.**

Then,

2. **Pull in the (clew) reefing line**
3. **Ease the halliard to lower the sail appropriately, and cleat it.**

That is all that is essential, and it is very quick and easy. Then, at leisure;

4. **Hook on the tack downhaul and tension it.**
5. **Re-attach the kicker**
6. **Tidy up the bunt of the sail along the boom.**

### Stowage of halyards and reefing lines



*Double pocket on each side of the double spinnaker bag;  
the two halyards in the starboard pair and the main  
and headsail reefing lines in the port pair.*

*Also shows spinnaker stowed in bucket; this bucket is sometimes carried  
instead on the starboard side as a convenient stowage bin for lunches, etc.  
(in waterproof containers), but in either case it doubles as the large  
emergency bailer - the fastest manual means of emptying a waterlogged  
boat is apocryphally claimed to be a frightened man with a bucket!  
Even in a Series 2 boat I often carry this bucket, by way of belt and braces.*

## Topping lifts

Although GP14s do not normally set topping lifts, a few boats do use them, and in recent years I have followed their example. This provides a number of advantages.

If a permanent topping lift is fitted the reefing process is even easier. There is then no need to disconnect the kicker, **although it is vitally important to release the tension**; then just slack away the halyard (STEP 1) and then pull in the reefing line (STEP 2) in a reversal of the order suggested above. The topping lift will prevent the boom landing on the deck (or in the water). Then complete the reefing as above, and finally re-tension the kicker.

This is an even easier method, and is closer to the method generally used for this type of reefing in yachts, but topping lifts are not generally fitted to dinghies, and it is yet one more piece of wire (or rope) on the mast. It is also not within Class Rules, so should be removed before racing.

This removes the need to disconnect the kicker before reefing and reconnect it afterwards (just slack it off, and retighten it at the end), and it also removes the need to temporarily “sky” the boom; thus the boom can be kept more fully under control, and the main sheet does not need to be let out so far.

It also of course enables the sail to be lowered and secured to the boom in its normal position (with sail ties) when coming ashore under headsail only, or when anchoring or rowing. This keeps boom and sail less in the way than they would be in the cockpit; note that I don't say they are out of the way altogether, since it is about head height when sitting on the thwart and rowing, but it is at least a considerable improvement.

There is no need for the topping lift to be adjustable, as it normally is on yachts. My one is a single length of rope permanently attached at the top of the mast, with a carbine hook to clip onto a strap eye at the end of the boom. The length was set when I first installed it, a few years ago now, and I have never needed to alter it since; it should remain just very slightly slack when the main is hoisted and kicker and sheet are both pulled in hard.

While comparatively few owners will wish to do so, some highly experienced cruising sailors - including yours truly - choose to rig topping lifts (fixed length in my own case) because we find them so very useful, both for reefing and also to enable the boom to stay in place when the sail is lowered, with the sail then gathered onto the boom with sail ties.



*Use of either main halliard or a topping lift to keep lowered sail out of cockpit, stowed on boom (with sail ties).*

*That keeps it somewhat less in the way, particularly when sitting in the boat, or rowing, particularly if sheeted well to one side; it is far from perfect, but a big improvement.*



## **Headsail Reefing - Details**

Headsail roller reefing (not just furling; there is an important distinction between the two terms) is almost a “must have” item, and one of the best dinghy systems is that developed by Rob Helyar, using his patented flexible reefing spar. His first generation rig uses a standard headsail and feeds it up a slot cut in the spar, while the second generation rig uses the spar with no slot, and instead feeds the spar inside a specially made luff pocket on the sail. [robhelyar@hotmail.com](mailto:robhelyar@hotmail.com), or see his adverts in *Mainsail*.

**Update, January 2019;** the Helyar system is the one with which I am familiar, and it was the first on the market, which is why it is the only one described in detail here. There are now two other competing systems, by Bartels and by Aero Luff-Spars, but I have no first-hand experience of them so I cannot offer any comment about them.

**Update, October 2019;** Jon Clark, of Edge Sails, has developed an alternative approach, in which he inserts battens along the luff of the sail. Again I have no first-hand experience of using this system, but one of the trainees at the 2019 Advanced Cruising Skills course had this system, newly purchased, and at least in the moderate conditions in which we were operating on that occasion it seemed to work well. At a later date I can follow up with him, to see how he is getting on with this system.

The primary parts needed just for furling are the drum and the top swivel. However furling, although immensely useful, is an “all or nothing” arrangement, whereas reefing allows you to deploy and use part of the sail area. *In extremis* you **may** get away with using only a furling system for reefing; I have once successfully done so (in a borrowed boat), off the wind, but don't rely on it, and especially don't rely on it upwind - which is where it is most needed. It is not designed to maintain torsional rigidity up the luff, and so one would normally expect the middle and head of the roll to twist badly, allowing those parts of the sail to unroll. As well as defeating the object, by adding unwanted sail area in the worst possible place - up aloft (where it increases the heeling moment), and producing an appalling set of the sail, that can actually damage the sail by unevenly stretching the cloth. For actual reefing, as distinct from merely furling, you therefore also need a luff spar.

With a standard modern stemhead fitting it may at first appear that there is not enough clearance between the mounts for the forestay and the tack of the headsail to clear the drum, but provided you use an enclosed drum you will normally find that the clearance is just sufficient. Although the forestay will indeed foul the casing of the drum, the casing protects the drum itself from fouling the stay, and if the forestay is only lightly tensioned it will not apply sufficient pressure on the casing to prevent the drum operating correctly.

Apply the serious tension to the genoa halyard, as normal, and then just take up the slack in the forestay. The forestay tension needs to be sufficient to keep it clear of the furled sail at all times, but not so tight that it distorts the casing of the drum and prevents rotation. Trial and error when first setting up the rig will give you a suitable setting within a couple of minutes, and will also give you a feel for how much tension you will need on all future occasions. Alternatively use a length of bungee cord to tension the forestay, and the tension will then be less critical.

I myself found that a modest bit of trial and error when first setting up the system was sufficient for all time; using three(?) complete turns of a lanyard to secure the forestay to the stemhead fitting I very quickly acquired a feel for how hard I needed to pull the lanyard, and thereafter I was able to get it right at the first attempt.

**Hardware:** for the ten seasons of my ownership of my new Series 2 boat I was using a Sea-Sure drum on a Holt Allen stem head fitting (I think the part number is HA 4001), and throughout that time it performed very well indeed.

If you use only modest rig tensions I suspect that any of the proprietary top swivels will do, and certainly I can vouch for the Sea-Sure one since I used it on my Series 1 boat. However I have found that with high rig tensions (as on my Series 2 boat) this swivel does not rotate freely enough, and as the luff spar is rotated it transmits the rotation to the halliard and tends to unlay it. When this problem arose in 2006, the advice I was given - from several sources - was to switch to the Harken top swivel; this has a double set of ball races, and I can confirm that it has fully solved the problem.



*Sea-Sure enclosed reefing/furling drum, also showing special luff pocket with reefing spar inside it.*



*Harken top swivel*

You will also need a means of keeping the forestay off the head of the sail. A disk of suitable diameter, mounted to either stay or top swivel, is one method; alternatively a small triangle of sheet material mounted to the forestay and carrying a simple fairlead through which the halliard runs (or *vice versa*) is another, while yet another is a stiff wire strut secured to the swivel and riding along the forestay.



*Preventer disk on halyard.  
(Mast stripped for transit)*

*Improvised from a plastic disk, apparently originally intended as a trapeze wire fitting*



*Preventer disk above top swivel  
keeps forestay clear of head of sail*

Finally you will need a reefing line, a fairlead for it on the foredeck near the stem head, and a cleat of your choice at the aft end of the foredeck. If your boat has washboards (spray deflectors) you

will need to bore (and bush) a hole through one of them to allow the reefing line to pass aft. For the reefing line I recommend 3 mm Excel Pro or Dyneema; if you use 4 mm you are likely to find that you cannot fit enough onto the drum to be able to fully furl a GP14 genoa. Set it up so that with the sail fully furled there are still about two complete turns left on the drum; this is particularly important since you will not always achieve the same tightness of the roll on all occasions, so you may occasionally find that despite setting it up so as to leave two turns on the drum there will occasionally be none left when the sail is fully furled.

### **Procedure:**

To reef the genoa, simply ease the sheet, and pull in the reefing line. That is all; it is that simple. But it does greatly help to ease the sheet first, and if you are close-hauled it is essential.

**Most important:** When shaking out the reef, i.e. “unreefing”, **never** let the line run out unchecked, and **never** leave it uncleated, as this risks the line coming off the drum - and if that happens it is likely to jam. **Always** pay the line out under control, and then if the sail is to be fully deployed **cleat off the line** with just a little tension still on it. It doesn't matter how little tension, so long as there is at least some.



*Full genoa, reefed down to storm jib size.  
The writer can testify how well the system works; he has sailed in Force 7/8 with deep-reefed main and with the Genoa reefed to at least this extent - indeed it might even have been reefed further, as per previous photos. Both reefed sails performed flawlessly.*

The full size GP14 Genoa has the clew so low that when the sail is reefed the sheeting angle changes appreciably, and this can make the boat point less well. This will not matter unduly if you envisage reefing only to enable you to safely return home, but it may be more important if you intend to routinely use the ability to reef to enable you to still go out in conditions when sailing would otherwise be hard work, and to give you an added safety margin when doing so.

If buying new dedicated cruising sails, one option is to have the Genoa cut with a higher clew; preserve the same luff length, for good windward ability, but a shorter leech. Be aware however that this may make the sheeting angle unduly steep when using full sail, especially if the scope for adjustment is limited on the particular boat; essentially it may be a matter of a compromise between the full sail and the reefed situations, and it may not be possible to optimize both.



*The Problem - sheeting angle becomes very shallow*

Alternatively, if using the full size Genoa, at the cost of very modest additional complexity the reefed sheeting angle can be improved by a pair of free-running blocks (one to each sheet) on a control line passing through the shroud bushes in the deck: see following photos.



*Partial solution; block pulled down, to improve sheeting angle*



*Block running free, but light tension on line.  
An artificial photograph, just to illustrate the system;  
one would never sail with it in this position.*

In practice the control line is normally either fully slack or fully tight. It is left slack until it is needed, and it is then pulled in tight once the sail is reefed, when on the wind.



## **Conclusion**

This article has described practical methods for reefing which have been extensively used by the writer, and which have proved to be effective. It is written principally for the cruising sailor who takes to the water with few other boats in company and without the close rescue facilities regularly available to the dinghy race competitor.

It is prudent and good sailing practice to rig the boat so that she can be safely sailed in a range of wind conditions, and the ability to reduce sail area is an important contribution to the safety and enjoyment of the crew.

Please note that the reference on page 3 to having a means of summoning outside assistance in the event of distress does not relieve the helmsman of his own overriding personal responsibility for the safety of the boat, which includes the ability to get safely ashore without the need for rescue if at all possible. It is only **after all onboard resources have been exhausted** that the question of distress arises, and good seamanship requires that one should be adequately equipped before going out, and should sail only within the limits of the abilities and stamina of helm and crew.

I hope you have found the ideas useful, and I would particularly welcome feedback from anyone who has other useful ideas to share. I will revise the article from time to time as new ideas come to light.

As a postscript there is an old saying that if the wind rises and you are wondering whether it is time to reef, it undoubtedly is!

And there is another old saying, that if the wind eases and you are wondering whether to shake the reef out, have a cup of tea before you decide, and then decide whether you still think you should shake the reef out!



*The writer's Series 2 boat "A Capella" in blustery conditions in Holy Island Sound, 2010. Genoa clew is cut a little higher than standard, to give acceptable sheeting angle when reefed. Don't be misled by the flat water, it is sheltered by drying banks all round, and conditions were indeed seriously blustery.*



## UPDATE

Having used the jiffy reefing and headsail reefing systems described fairly extensively on two boats over twelve seasons, if I were setting the system up again I would make one small modification.

It is pure chance that on my boats I fitted the reefing lines on the port side of the mast and boom. This was done without appreciating that either side had an advantage over the other, but if setting it up from scratch again I would lead all reefing lines to the starboard side. That would have the advantage that for the short period of time during which the boat is not fully under command, because you are busy dealing with the reefing system, you are on starboard tack and thus have right of way over boats on port.

# Appendix 1, Autumn 2009

## 1. Location of controls

The GP14 cruising fleet in the 2009 UK National Cruising Week were caught out off a major Anglesey headland in an unforecast and independently documented force 7/8; this was on a forecast of only force 3 with the possibility of force 4 later (i.e. after a further 12 hours). The local lifeboat performed no less than eleven services that afternoon, and it is they who confirmed the wind strength (from their log) the following day - and the lifeboat station is in the lee of the land ...

The one single-hander in the fleet, a massively experienced cruising man, capsized and inverted; he subsequently recovered unaided, in conditions in which I know that I would have been struggling, while I stood by him under deep reefed genoa and no main, but that is another story.

In our subsequent debrief he commented that he had been preparing to tack, in order to reef, because his reefing lines were on the lee side. At that point he was suddenly hit by a rogue wave with such violence that it threw him right off course and into a gybe situation.

He is sufficiently experienced for me to accept that account without question.

Without making a positive recommendation (because everyone's circumstances and pattern of usage are different), it seems sensible to consider making reefing lines equally accessible from either side of the boat. There are two possible ways of doing this:

1. make them double-ended, and lead each line down both sides of the boom,
2. make them single-ended (as per this paper), but bring them to cleats on the bottom of the boom rather than the side.

With alloy booms the second of these alternatives itself could be achieved in two different ways:

1. bring the line through the interior of the boom
  - effectively prevents blocks being repositioned if you use a different sail from the one the system is set up for
  - usually already used for the outhaul, often with a purchase
  - potential for getting multiple lines snagged with each other
  - impossible to clear any snags at sea
  - a pain to re-rig if anything goes wrong with the lines (e.g. lose an end inside the boom ...)
2. bring in helically (one quarter turn) round the outside of the boom.
  - permits position of blocks to be adjusted to suit changes to different sails
  - much simpler
  - easy to clear any snags
  - easy repair whether ashore or at sea
  - possible concerns about friction.

## 2. Single line mainsail reefing systems

Steve White is a serious day-cruising GP14 sailor whose seamanship and boat handling I respect; many years ago in his youth he was a serious contender for the Olympics in FDs, so he certainly knows his boat handling, and in years of maturity he is now a dedicated cruiser and a very competent seaman, and is either Commodore or a past-Commodore of Cody Sailing Club - which is specifically a dinghy cruising club. He has developed a single line mainsail reefing system and claims to be well pleased with it.

The concept is not new, by any means. My primary concerns about such systems would be:

1. The amount of friction in the system, and
2. Reliability and ease of repair at sea.

Steve reports no problems on either score. I have not seen his boat, but a fellow member of my own club did initially try a single line system and gave up on it because the friction in the system prevented him pulling the foot of the sail properly tight.

I also feel that in order to obtain the optimum shape for the reefed sail there is probably some benefit in having independent control of tack and clew tensions, and that independence is inevitably lost with a single line system. However Steve, as an erstwhile Olympic contender, probably knows at least as much about sail shape control as I do, and he professes himself happy with the system.

So, “yer pays yer money an’ yer takes yer choice” ...

## Appendix 2

### Square Gooseneck Roller Reefing

This is historically the system originally fitted as standard to GP14s, and to most other sailing dinghies of the day. Since many of our early boats still have this system, whether their owners realize it or not, this Appendix sets out how to use it.

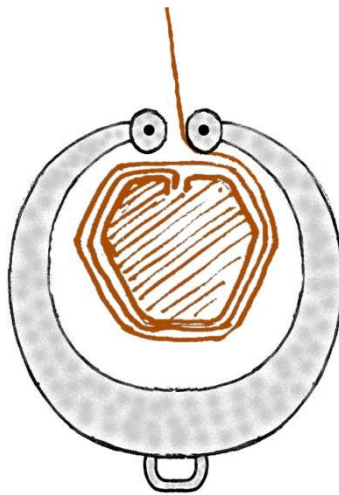
And this writer confirms that he has once pulled own a reef at sea using this system, for real, in a GP14; this was on a passage from Littlehampton to Worthing in 1967. So the system works, and can indeed be safely and successfully be used at sea.

**But it is nothing like as convenient as slab/jiffy reefing, and it does not produce such a good shape to the reefed sail.**

The shaft of the gooseneck and the corresponding fitting on the boom end fitting (the forward one) have a shoulder which has a square section, and reefing is achieved by partially lowering the sail and wrapping the loose foot around the boom. Re-tensioning the halyard to hoist the reduced sail will not rotate the boom due to the gooseneck shaft (attached to the mast) preventing rotation.

This reefing method is not as good as slab reefing, for the reasons given above, and for many years most proprietary gooseneck pins and boom fittings seem to have been made with wholly round sections – one would expect them to be cheaper to make, and they are entirely satisfactory for the majority of customers for brand new fittings, who are largely racing sailors. Additionally both the boom mounted kicking strap and the modern centre mainsheet arrangement require special fittings to allow them to be used once the sail has been furled. These factors present practical difficulties for owners of newer boats.

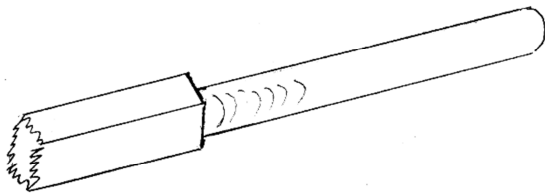
The diagrams and text which follow describe the way to reef the sail with the square gooseneck system.



*Mainsheet claw, for use with centre sheeting and roller reefing.  
With apologies for the limitations of my sketching ability!  
(Claw fitting in black and grey; boom and sail in maroon.)*

*This secures the sheet to the boom, while allowing the boom to rotate,  
and the sail passes between the pair of nylon rollers at the top.*

The gooseneck pin absolutely must have a decent length (the minimum being getting on for two inches) of circular section extending beyond the square section shoulder, so that it is never necessary to take the boom off the gooseneck - merely slide it aft a couple of inches and then roll it. It is also essential that the gooseneck should be a sliding type, so that once reefed (with the gooseneck raised) it can then be pulled downwards to tension the luff; when reefed you don't want to have to take the boom off the gooseneck to tension the luff, and in any case if you have the long gooseneck pin described you won't have that option. (The only other alternative for getting adequate luff tension is a halyard winch - which is not allowed within the class, is rarely used on dinghies, and should not be necessary.) This is the original design, but the hardware is no longer routinely manufactured, so unless it can be either specially fabricated (e.g. by your local engineering shop) or sourced secondhand the equipment for slab reefing is a lot easier to obtain.

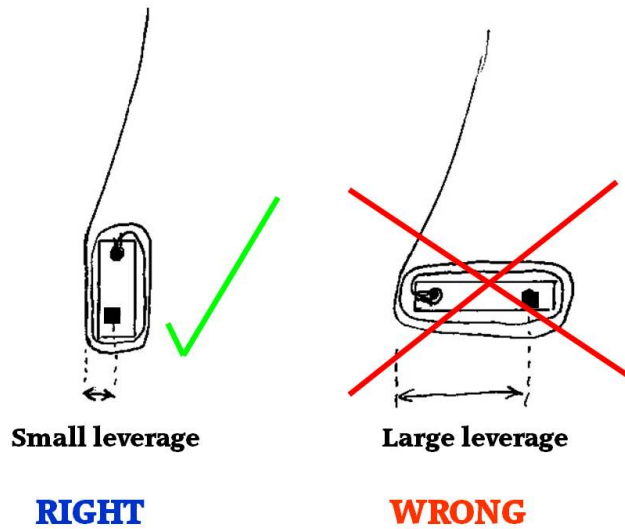


*For square gooseneck roller reefing, the gooseneck pin needs to have a decent length (about two inches minimum) of round section beyond the square shoulder.*

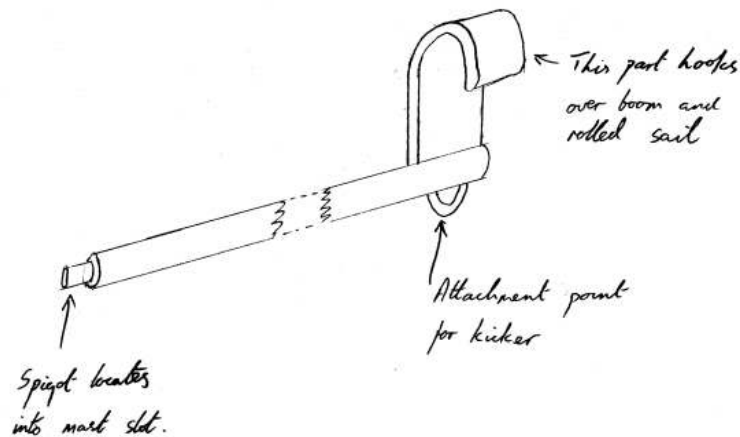
*That in turn means that it needs to be a sliding type, otherwise you will never be able to get the boom onto it if the halyard is tight enough to do its job properly.*

To reef the sail; disconnect the kicker, raise the gooseneck as high as possible on its slide, ease the halyard a little, pull the boom aft a couple of inches (leaving it still on the gooseneck), and rotate the boom to roll up the sail. Progressively ease the halyard a little at a time and continue to rotate the boom until the desired amount of reef has been achieved. Push the boom forward on the gooseneck to lock it, tension the halyard, cleat it off, pull the gooseneck down on its track to tension the luff, and tighten the clamp screw.

To minimize the moment (or “turning force”) generated at the gooseneck, and also to ensure that the bending stress produced by the kicker does not become too much for the strength of the boom, always finish with the longest side of the boom section vertical.



There are three options for the kicker if you are using roller reefing: either a reefing claw (illustrated below), or a triangle of sail inserted into the roll around the boom (also illustrated), or sail with no kicker. In the latter case, avoid gybing and avoid a dead run (and thus the risk of a Chinese gybe), but you would possibly avoid both anyway in the sort of conditions that require reefing, and sail with due caution. With those caveats it is not unsafe; it won't be as efficient as sailing with a kicker, but that won't be a priority.

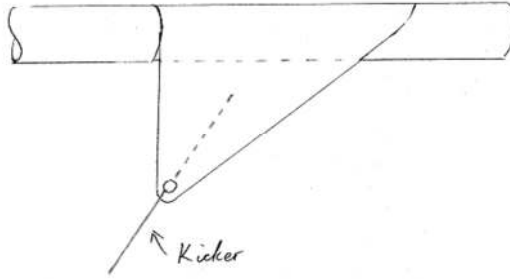


*Roller reefing kicker claw*

Kicker claws like the one illustrated above used to be readily available, but nowadays it is probably a matter of finding one on eBay or at a Boat Jumble, or fabricating one for oneself. Note that the one illustrated is a Firefly one, intended to locate in the track of a rotating mast, and some modification would be needed to adapt it to a GP14; some experimental methods of doing this are shown on the next page.

The other alternative is to roll in a triangle of sailcloth, as illustrated. Have a purpose-made piece, with a reinforced cringle (note reinforcement not shown on sketch), carry it in the boat as routine, and choose some easy system for positioning it so that you know where to place it when you start rolling it in.





*Triangle of sailcloth as kicker attachment for roller reefing  
Note that cloth should be so cut, and so placed, that line of kicker  
(extended) falls within the triangle (as shown), in order to keep cloth taut.*

If this means of attaching the kicker is used you will of course have to start rolling the cloth triangle in with the sail before you have finished the reefing operation.

FOOTNOTE - Alternative Systems.

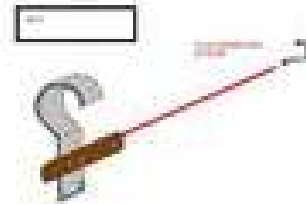
Roller reefing around the mast (rather than the boom) is used in a few classes with unstayed masts and loose-footed sails, notably Toppers (and I think also classic Lasers). Ratchet roller reefing and Barton worm roller reefing, in both cases around the boom, and points reefing, are all very occasionally found on some older traditional heavy displacement dinghies, but although the second one at least is widely used on older yachts I have never seen any of them used on GP14s. In-mast and in-boom internal roller reefing is, so far as I am aware, used only on yachts.



**claw\_mk3**

By: kfkfz41

Last Modified: Oct 13, 2009



**claw\_mk4**

By: kfkfz41

Last Modified: Oct 13, 2009



**claw\_mk5**

By: kfkfz41

Last Modified: Oct 13, 2009



**claw\_mk6**

By: kfkfz41

Last Modified: Oct 29, 2009

*Reefing Claw redesigns by Kevin Foote,  
at the time GP14 Class Captain, Liverpool SC,  
working in consultation with the author*