

PBO

BRITAIN'S BEST-SELLING BOATING MAGAZINE
No. 604 SEPTEMBER 2016

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How to make best progress in calm weather - without the engine

TESTED

MOORING SNUBBERS

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HOT TIPS FOR HEATER FITTING



12 mooring snubbers

David Pugh tests 12 readily-available snubbers to find out which one best absorbs a snatch load

PBO
TESTED



Let's face it – mooring snubbers aren't the most exciting products in the chandlery. And while you might spend hours choosing the electronics which best suit your needs and pocket, or debating the benefits of the added cost of Gore-Tex clothing versus the many copies now available, when buying a snubber most of us will probably pick up whatever the shop has in stock. You might be influenced by how easy they are to fit or by the annoying creaking noises made by the ones fitted to your neighbour's mooring lines, but at the end of the day a snubber's a snubber. Isn't it?

Before answering that question, let's go back to what we look for in a snubber. Ultimately a sacrificial component, we want it to mitigate the not inconsiderable forces exerted by waves and wash to give lines, cleats and strongpoints an easier time. It needs to absorb these forces quickly but release them gently, preferably without indulging in an orgy of simple harmonic bouncing in the process. And it needs to do this comparatively quickly, before the next wave comes through.

Put like that, they don't sound so simple, so we gathered together 12 readily-available snubbers, specified for 14mm line, to find out which best does the job.

What's in a snubber?

There are three main materials used for snubbers: rubber, bungee cord and springs. The latter two are deployed in a similar fashion, clipped or tied into a bight of the mooring line so that they absorb any snatch loads, retaining the mooring line as a failsafe. The rubber ones work in a variety of ways, either wrapping or weaving the mooring line around or through the snubber to use the ability of rubber to absorb combinations of tensile, compressive and shear loads.

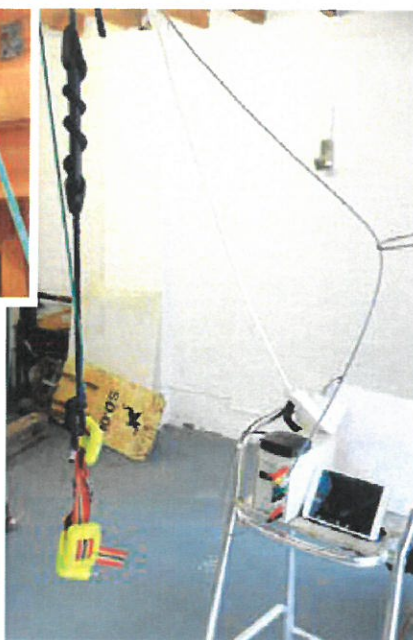
How we tested them

Some past tests have focused on how snubbers perform under increasing static loads, but we wanted to see how they would react to a snatch load. To measure this, we installed a strongpoint in the PBO garage roof, to which we attached a load cell. We then connected the load cell to a conditioning amplifier to provide a stable supply voltage and amplify the tiny output voltage to a level easily measurable by our Velleman WFS210 software-based oscilloscope.

We tested each snubber by rigging it into a length of 14mm three-strand nylon rope attached to the load cell. For the Easterner snubber we used 12mm line, as we were unable to source it in the correct size. We tied an 11.2kg mass to the end of the line (Ben Meakins' diving weight belt), and adjusted it to measure 1.2m from the load cell to the mass. We then dropped the mass from a point level with the load cell. A rough calculation suggests that the mass is travelling at around 9.4 knots at the end of its travel. A 2,500kg boat would need to be moving at around



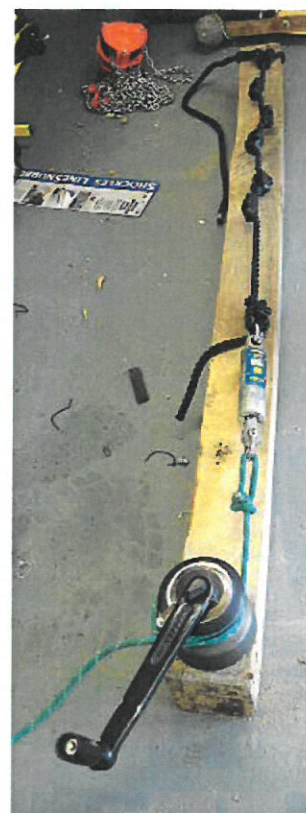
ABOVE A load cell hung from the garage roof measured the force on the line **RIGHT** An 11.2kg mass was used, monitored by an oscilloscope



0.6 knots to have similar energy – easily possible from waves or wash. To capture the initial absorption and subsequent bounces we set the oscilloscope to trigger on a rising voltage, capturing around three seconds of data from that point.

In addition, we also set up each snubber on a length of line between a winch and a strongpoint affixed to a 6in

square oak post, using a 500kg dynamometer to measure 20kg steps up to 200kg, unless the snubber was still extending – in which case we continued the test to a maximum of 300kg. At each point we measured the extended length of the snubber.



To graph the force vs extension characteristics of each snubber we progressively applied a load of 200kg with a winch, measuring the extension at 20kg intervals

SNUBBERS ON TEST

14mm nylon three-strand line

PRICE: £2.60/m
Bought from www.piplers.co.uk

Mooring lines should be chosen so that they are shock absorbers in themselves, for which nylon is the best commonly-used rope-making material. Twisted lines such as three-strand or multiplait also tend to be better as their construction inherently stretches under load.

On our drop test, the peak load reached 190kg, with one significant bounce thereafter, showing that it dissipated the shock very quickly - too quickly. We tried the same test with 12mm line, which reached 195kg, suggesting that a larger line is a better shock absorber.

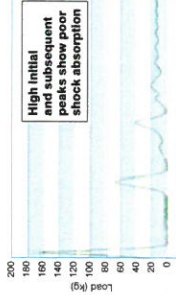
On our extension test, the line extended quickly by about 20mm (1.6%) as the load reached 50kg, gradually extending a further 20mm as the line tension reached 200kg.

Galvanised steel spring

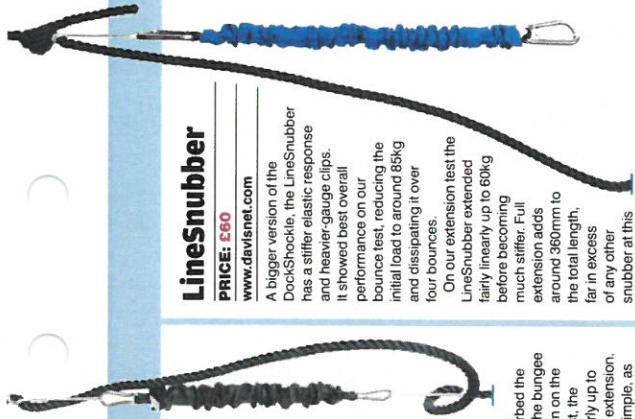
PRICE: £3.99
www.piplers.co.uk (& others)

As you might expect, this gave a completely linear response in our force vs extension test, reaching maximum extension at 120kg. It showed poor performance in absorbing the first snatch in our drop test, peaking at 168kg as the spring presumably reached full travel, and returned the highest line load on the second and third bounces, showing that it takes longer than other types to fully dissipate the shock. The design is relatively secure as it bottoms out and continues to hold when overstretched, but take care to avoid line chafe on the 5mm wire. The manufacturers recommend that the spring should be installed in a tight fit on the mooring line, or that if the line is cut a safety chain should be installed between the ends.

This design is liable to squeak, as can be verified by visiting your local marina when some swell passes through. A range of different sizes is available for higher loads, and stainless versions to avoid corrosion.



This showed high initial and subsequent peaks show poor shock absorption



DockShockle

PRICE: £50
www.devisenet.com

This is essentially a few lengths of bungee cord, made fast to spring clips at either end and sheathed in tough fabric to protect it from UV and chafe. The DockShockle is intended for boats up to 12m (40ft), and our test suggests that the manufacturer's expectation is for lower loads than our bounce test: the first bounce peaked at 170kg, not far off the figure without a snubber in line.

However, subsequent bounces showed the snubber quickly absorbed the shock, the linear characteristic of the cord generating a triangular pattern on the oscilloscope. On the extension test, the DockShockle extended fairly linearly up to around 40kg, where it reached full extension. Fitting the snubber is delightfully simple, as two Line Grabbers (short lengths of Aramid line with eyes spliced in each end) are provided, which attach to the mooring line with a simple Prusik knot and allow you to clip the snubber in place.

They were still extending slightly at this point, but the mooring line was bar taut and the snubbers looked unstable as they were only retained by slightly raised 'ears' on either side. On the bounce test they peaked at 151kg, and were equal to the Bungys in their speed dissipating the shock.



A high first peak shows on our test, but much better absorption later



This showed best shock absorption, but more bounces than some

Unimer Smart Snubber

PRICE: £10 each
www.unimer-marine.com

Made in an S-shape, these polyurethane snubbers can be fitted to mooring lines that are already rigged. To add more compensation, simply add more snubbers. Unimer recommend a minimum of two. Smart Snubbers are added to each mooring line, but we used five for consistency with the Bungy test. On the extension test the snubbers extended quickly to reach 175mm extension at 40kg, continuing more gradually to plateau at 204mm with a load of 210kg.

The initial peak is fairly high, but later absorption is good



The initial peak is fairly high, but later absorption is good



At 204kg the line was bar taut, but the 'ears' on the snubbers stopped them from popping off

LM Products inline snubber, model 3 (also badge)

PRICE: £11
www.lindsundsmarine.se

This type of snubber has the advantage of looking very neat on your mooring line, and this version of it is particularly tidy, with the warp exiting in line with the snubber at either end. It is fitted by weaving the line through the snubber six times, meaning that it must be in place before the line is rigged and that removal is fiddly - the snubber is best left permanently fitted.

On the extension test the snubber gave a maximum extension of 50mm, which it reached at 80kg. At this point the mooring line had pulled straight and the snubber had no further effect. This relatively low absorption figure affected the bounce test, which peaked at 173kg. However, the subsequent bounces did dissipate quickly.



The snubber had little effect at first, but worked below 80kg

Forsheda

PRICE: £25
www.trelleborg.com

Perhaps the most familiar type of snubber, the Forsheda is fitted to the mooring warp before it is rigged. The line loops twice through each end, secured by moulded in V-cleats, and the line is wrapped several times around the central cylindrical section of the snubber. This allows the snubber to absorb shocks in two ways: extension of the entire unit, and compression of the centre section as the coils of line tighten.

On our bounce test, the Forsheda peaked at 106kg, placing in the top five performers. It then dissipated the remaining force progressively over the next three bounces. On the extension test it described a smooth curve, flattening off at around 150kg load and reaching 265mm at 200kg. Removing the line from the snubber is tricky as it beds firmly into the V-cleats, so this should be permanently fitted.



The Forsheda dissipated the shock quite progressively

Easterner

PRICE: £24 (14mm model £32)
www.seamarknunn.com (& others)

This is virtually identical in design to the Forsheda, although the unit we tested was slightly smaller as it was intended for (and tested with) 12mm line. The main difference is in the V-cleats, which are softer and less well formed than the Forsheda, so may be more inclined to slip. We saw no evidence of this on test, however.

The extension curve is very similar to the Forsheda, with a lower maximum extension of 233mm at 200kg. On the bounce test it peaked at 103kg, taking slightly longer to fully dissipate the shock.



This appears to be a copy of the Forsheda, with similar results

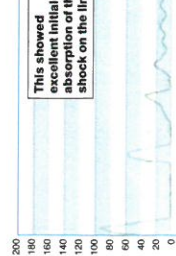
Unimer wraparound

PRICE: £21
www.unimer-marine.com

Although similar in appearance to the Forsheda and Easterner products, the Unimer wraparound snubber only needs the line to pass through the ends once, where it is held secure by a toothed cleat similar to a Clamcleat. The line is then wrapped around the central section, which is shorter and thicker than the Forsheda for the equivalent line size.

As a result, it reached a higher load (around 220kg) on our extension test before the smooth curve flattened off, extending by about 300mm. On the bounce test it returned the second-best result, peaking at only 93kg with the remaining bounce loads declining almost linearly.

The single cleat makes it easier to release the line, but this is still a product best left attached.



This showed excellent initial absorption of the shock on the line



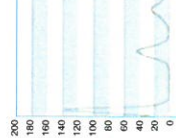
Bungy

PRICE: £16/pair
www.arolyth.se

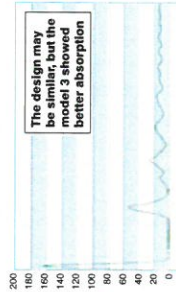
These little gadgets, sold in packs of two, neatly add a variable level of compensation to a mooring line - simply add more Bungys for more compensation. They fit by passing a bight of mooring line through the loop of the Bungy before snapping the crossbar in place to secure it, so they can be easily added (and removed) from rigged mooring lines. We tested with five Bungys on the line (recommended for exposed moorings). On our extension test this gave one of the smoothest results, and was still extending gradually at 200kg. On the bounce test it peaked at 138kg, around the middle of our results, but it was among the fastest to fully abate the shock.

A simpler version of the above, this also requires the line to be woven through six times and is likely to be a permanent fitment. It's not as neat a look as the model 3 version, as the line exits at right angles to the snubber and the whole thing has a squarer look.

On our extension test it extended just 28mm before fully straightening out at 80kg. This made it a poor performer on the bounce test, peaking at 165kg. The subsequent bounces dissipated quickly.



The first peak is high, but later absorption was fairly rapid



The design may be similar, but the absorption was better

Unimer U-cleat

PRICE: £34

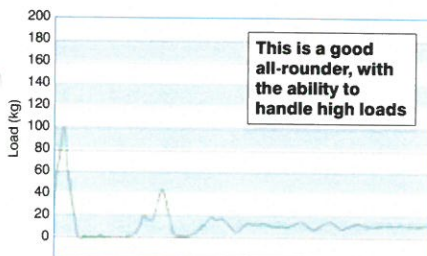
www.unimer-marine.com



This is designed to address the problem of easy removal from the line by using Clamcleat-type jammers which can be popped out from the end of the snubber. This also allows it to be fitted to an already rigged line.



Unimer have also chosen a cruciform rather than cylindrical section. The result of this is that on our extension test it extended almost linearly to 360mm extension at 200kg, and looked set to keep going. On the bounce test, it came in third with a 100kg peak, dissipating the shock much more rapidly than the cylindrical version.



Snubber One

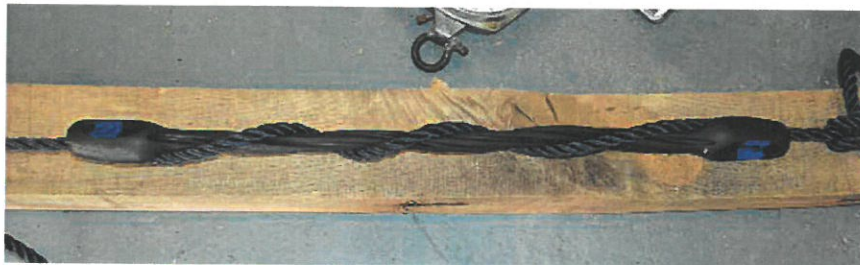
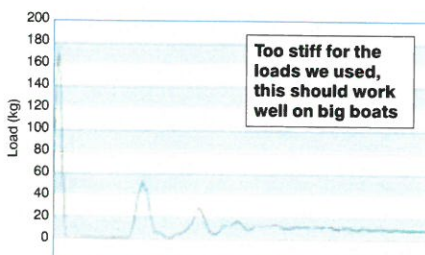
PRICE: €45.60

www.thesnubber.com

This relatively new product from Finland also allows you to easily add and remove it from a ready-rigged mooring line. Fitted with chunky monkey's fists at each end, it is secured by passing a bight of the mooring line through the loop below the monkey's fist, then twisting the mooring line once around the knot. This proved very secure on our test.

The polyurethane used for the centre section is noticeably stiffer than the rubber versions, and stretched progressively to reach 165mm extension on our test at 300kg, with no sign of reaching a plateau. On the bounce test it peaked at 170kg and rapidly dissipated the remaining shock.

The fitting system on this works well, but the Snubber One, aimed at boats from 5-12 tonnes, was too stiff to return good results on our test. A new product intended for 1-5 tonne boats, Snubber Two, is on the way, which we look forward to trying.



The U-cleat idea works well, so if you think you might need to remove the snubber on a regular basis this is a good choice.

ABOVE The snubber stretches, compresses and twists to absorb an impressive amount of force gently and progressively

Test results and conclusion

Going back to the start, I said that we were looking for a product which could absorb snatch forces quickly but release them gently, not bounce too much, and be ready for the next wave in short order.

The best performer in terms of initial shock absorption was the LineSnubber. After that follows the Unimer wraparound, with the Forsheda, Easterner and Unimer U-cleat next in a tightly-packed group. No other designs came close to the performance of these five. Of this group, the Unimer U-cleat

snubber dissipated the bounce force the fastest, followed by the LineSnubber. The Forsheda and Easterner products come next with very similar results, with the Unimer a little slower to stop bouncing.

For best buy then, it's neck and neck between the LineSnubber and the Unimer U-cleat. However, our extension test shows that the Unimer will deal with higher loads while still continuing to compensate, so it would be my choice to moor my boat in a storm – as well as being nearly half the price.

