Refurbishing *Winkle's* Centreplate

By Keith Thatcher, Shrimper 144 (Winkle), September 2012

How often do you look at your centreplate? If you're anything like me, the answer is probably "rarely". *Winkle* lives on her trailer when off the water, but is usually launched and recovered each season using Poole Yacht Club boat lift. This provides an opportunity to inspect those critical, hard to see, areas normally invisible when ashore. By October 2011, after 28 seasons, it was obvious that rust was really starting to take a hold. The part visible below the keel had, at some time, been painted black, but this was now flaking off, taking any remaining galvanising with it. What the part still hidden in the case was like was anyone's guess. Unable to put off refurbishment any longer, *Winkle* was taken home to be stripped of her gear ready for lay-up whilst I formulated a plan of action.

Removal

Theoretically, removing a Shrimper centreplate is simply a matter of disconnecting the hoist wire, removing the pivot bolt, lifting the boat and allowing the plate to slide out of its slot in the keel. To save time I removed the cabin entrance steps, centreplate pivot bolt and hoist wire (in my case a Dyneema rope- more of that later) whilst she was at home, leaving the plate resting on the trailer keel rollers. One word of advice – when working on the pivot bolt I always insert a wooden wedge into the keel slot to support the forward end of the plate. This prevents the plate falling as the bolt is removed, which could damage the GRP case sides.

In late October *Winkle* was taken back to Poole Yacht Club where she was lifted off her trailer whilst helpers stood ready to catch and support the centreplate as it emerged. We needn't have worried - the upper part of the plate jammed at the bottom of its slot and had to be "walked" out by repeated lifting and lowering the boat in the hoist. Once free, we finally saw the full extent of the deterioration - not pretty sight (see fig 1).

Fig 1: Centreplate as removed

A Shrimper centreplate is made from 15 mm thick mild steel and weighs about 72 kg (160 lb), a heavy lift for two men, so it was loaded into the back of my LR Discovery using a fork lift. There it remained, supported on timber blocks, for the next two weeks whilst I removed and made good all the fittings, described in more detail below. Most were held on with stainless steel fastenings, well rusted-in, that sheared off rather than unscrew. Fitting position is not critical, so rather than try extracting the broken fastenings I found it easier to grind the stubs off flush with the plate surface then re-drill and tap new holes alongside.

I opted to have the centreplate re-galvanised – other owners have used alternative coatings, such as epoxy paint (see Chris Sharland's account of *Shellback's* plate repair in this section). Whatever the coating chosen, it essential to remove all rust and old paint before applying, which is best done by shot blasting. Luckily, another Poole based owner, Roy Ratazzi, (*Folly* 121), had been down the same road a couple of years earlier and provided much useful advice and information. We are lucky in having a galvanising contractor, Wessex Galvanizers, located in Eastleigh, Hampshire, and less than an hour's drive from Poole. There is also a shot blasting contractor on the same industrial estate, which most owners seem to use, but to avoid too many trips along the M27, I chose a local firm in Poole. A full list of the suppliers used is included at the end of this article.

Galvanising is priced by the weight of the item being coated, with fixed prices for specific weight bands. Since the bands are quite wide and a centreplate falls just above a lower limit, I decided to refurbish Winkle's other mild steel deck hardware, such as tabernacle & gooseneck. Getting these off and cleaned up added some days to the project duration, but as *Winkle's* centreplate would not be replaced until she was re-launched next spring, I had no need to rush.

Centreplate Shape and Fittings

Centreplate shape

The Shrimper centreplate has evolved over the years with changes being made to both geometry and attachments. Early Mk 1 boats, such as *Winkle*, have spacer buffers attached to the forward and top edges to keep the plate central in its case and prevent it slopping from side to side when lowered. On later Mk1s these have been replaced with turns of thin line (about 3mm dia.) through holes in the plate at similar locations to the original buffers. The centreplate on Mk2 boats has a slightly different profile, but as I have not yet seen a Mk2 plate removed, cannot confirm whether which, if any, buffers are fitted. I have no information on when Mk1 boats changed from early to later type, so you'll just have to wait and see what emerges.

Fig 2 shows the arrangement of Winkle's centreplate, typical of an early Mk1, with the fittings indicated. Fig 3 shows a later Mk1 plate with turns of thin lines tied through holes in the plate to create buffers at the same location as the fittings in the earlier version. Fig 4 shows a Mk 2 (sail No. late 700s) centreplate lowered to show the difference in shape.

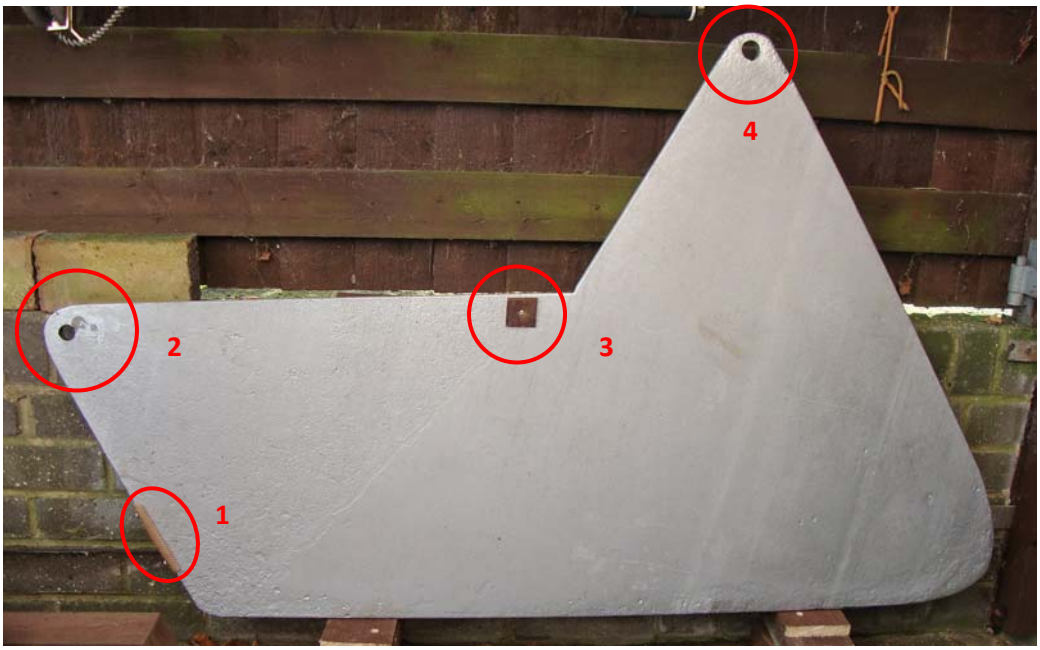

Fig 2: Early Mk1 centreplate showing fitting positions

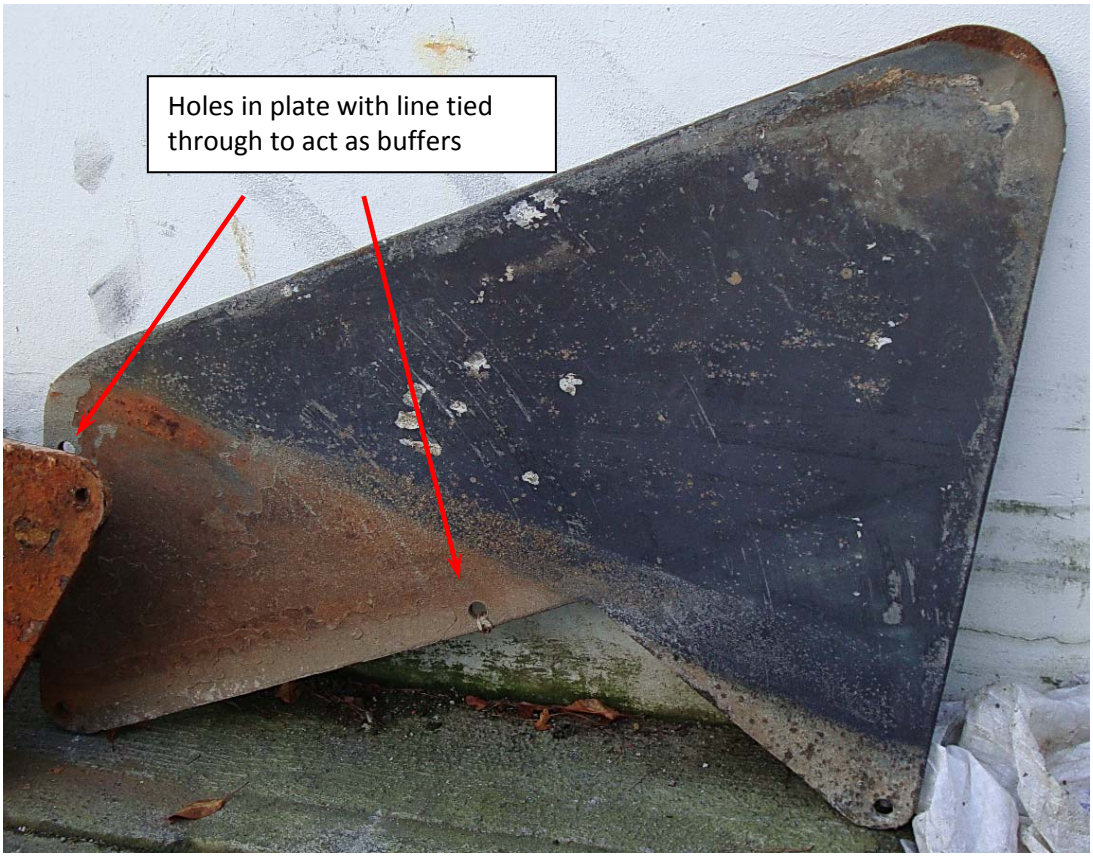

Fig 3: Later Mk1 Centreplate

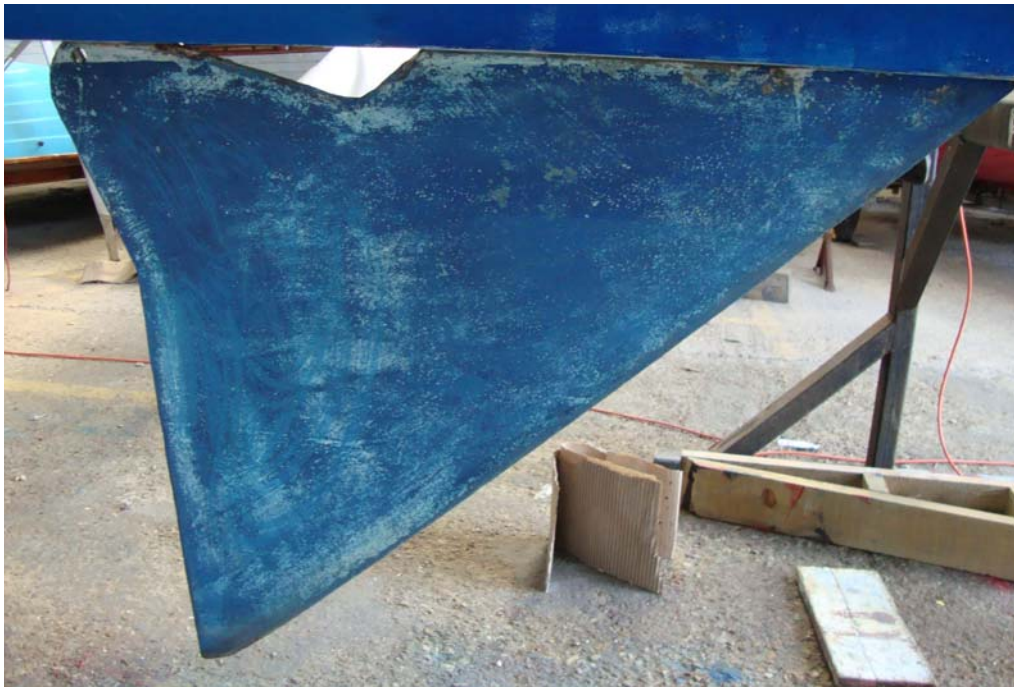

Fig 4: Mk2 centreplate lowered to full extent

<u>Centreplate Fittings</u> (see fig. 2 for item numbers)

Leading edge buffer – item 1

Contrary to popular belief, this is not a bumper to prevent damage to the forward end of the case should the plate be lowered too far. Just two very rusty screws and washers remained when *Winkle's* plate was removed and I subsequently discovered that these originally held a short length of plastic tube, similar to that used on the bilge pump, slit lengthways to straddle the edge of the plate. As a consequence the screw heads protrude - not a good idea for a bumper – and, as can be seen in Fig 5, which represents the plate when lowered, the buffer doesn't actually touch the end of the case, the first point of contact being the lower rounded corner of the centreplate. The conclusion, therefore, is that this buffer is intended to hold the plate central and prevent the forward end moving from side to side when lowered.

Having ground off the broken stubs, I drilled and tapped new M5 holes in the leading edge of the plate about 15 mm below the originals and fitted 110 mm of 1" o/d reinforced PVC hose (the length isn't critical), slit longitudinally to straddle the plate thickness. Hole depth was about 20 mm into which was fitted a 25 mm long cheese head screw with washer. This allowed the screw to bottom-out before pulling the tube hard against the plate. The cut edges were also trimmed so that the finished width of the buffer when screwed home would not exceed the width of the case slot, about 24 mm. See figs. 6 & 7.

Fig 5: Lowered plate representation

Figs 6 & 7: - Forward edge buffer

Pivot Bolt bush – Item 2

A steel tube is pushed through the pivot hole in the plate to take bolt wear rather than allow distortion of the plate material. It is designed to be renewable, but, as this can only be done by removing the centreplate, is rarely, if ever, replaced.

On *Winkle's* centreplate the area around the pivot bolt hole was extremely rusty (see fig 8) and although Cornish Crabbers told me that the bush should just tap out, it being a snug push fit when new, after 28 years mine was well and truly rusted in. Extraction therefore called for some brute force – a large hammer and brass drift. But first I carefully cut radial slots in the bush using a small hack saw. This allowed the steel tube to fold inwards as it was thumped, so reducing its hold and allowing removal without damaging the hole, which luckily was not worn. Cornish Crabbers supplied a new bush, now nylon, in place of the original mild steel. When fitting the new bush, after galvanising, some dressing of the bolt hole was necessary, owing to the irregularities in the coating. The bush was given a thin coating of grease to ease its entry into the plate and provide some compensation for the zinc removed whilst dressing the hole. Original and new bushes are shown in figs. 8, 9 & 10.

Fig 8: Original bush in place

Fig 9: Bush as removed

Fig 10: New bush fitted

Mid Length buffers – Item 3

These should be two pads of Tufnol, about 40 mm square x 3 mm thick, each attached with a single countersunk M5 screw with the head below the surface of the pad so as not to damage the case. Some owners have found one or both missing. *Winkle's* were both still in place, but on one the Tufnol had dished - it was this that had caused the plate to stick as it was being removed. I replaced both pads with 3mm thick pieces cut from a 50 mm dia. bar of High Density Polyethylene (HDPE), which has excellent wear resistance and low friction. These were secured using 12 mm x M5 countersunk screws trimmed to prevent them meeting in the centre of the plate. (See figs. 11 & 12)

Fig 11: Original Tufnol pad

Fig 12: New HDPE pad

Winch Wire Attachment – Item 4

As anyone who has replaced the winch wire will know, this attaches to the centreplate via a small diameter hole located in the top edge of the plate. The wire has a Talurite ferrule about 7 mm dia. fitted to one end and the bare end is fed up through the plate until the ferrule lodges against the underside of the small hole.

For the 2011 season Winkle had been fitted with a Dyneema line in place of a wire, but when removed in October significant fraying had occurred where the line left the plate. Once the plate had been removed I discovered significant rusting, both within the hole and around its top edge. This was cleaned out prior to shot blasting, the first step being to run a drill down the wire attachment hole. I also smoothed the exit and entry areas to create a countersink.

The nominal diameter of the wire hole is about 4 mm, but by the time all rust had been removed and the plate had been shot blasted back to good metal this had become 7 mm, too large for the standard Talurite ferrule. After galvanising I fitted a copper tube liner, belled at each end to hold it in place, which reduced the wire hole diameter to about 4.5 mm. I was intending to re-fit the Dyneema line, but feared that even a substantial securing knot would still lie predominantly within the area of the liner, which might then pull out. To spread the load into the surrounding plate I made up a saddle from a piece of 25 mm dia. stainless steel tube. The finished copper liner and saddle can be seen in Figs 13 to 15. Also visible in Fig 15 are 2 x two turns of 3 mm line, one tied each side of the lifting line, that act as a buffer and hold the top of the centreplate central in the case. This is common to all centreplates, both Mk1 and Mk2.

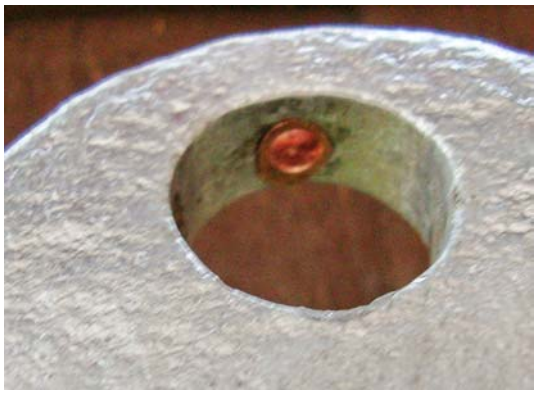

Fig 13: Copper tube hole liner underside

Fig 14: Copper tube hole liner top view

Fig 15: Support saddle in place with Dyneema lifting line & buffer lashings

Refitting

One fine and sunny Monday morning in April the refurbished centreplate was loaded into the back of my Land Rover (by hand, this time - thank goodness for strong neighbours!) and taken down to Poole YC . *Winkle* was already there, having been rigged ready for launch the day before. It was time for the two to be reunited again.

When fully retracted, the underside of a Shrimper centreplate lies within the slot about 20 mm above the keel line. This means there is nothing to get hold of to adjust its position when aligning the pivot bolt holes. The plate needs to be held at an angle whilst being inserted into the slot and to do this I designed and built a supporting cradle that held the plate vertical transversely but with its lower edge angled at about 21°. The cradle was placed on a low flat-bed trolley, making it easier to move the centreplate to suit the boat than adjust *Winkle's* position with the hoist. The idea worked very well, despite the top of the vertical supports coming to within 30 mm of the keel when the centreplate was fully inserted (see fig. 23). The centreplate in its frame can be seen in Fig 16: It will be noticed that the Dyneema winch rope is already attached to the centreplate.

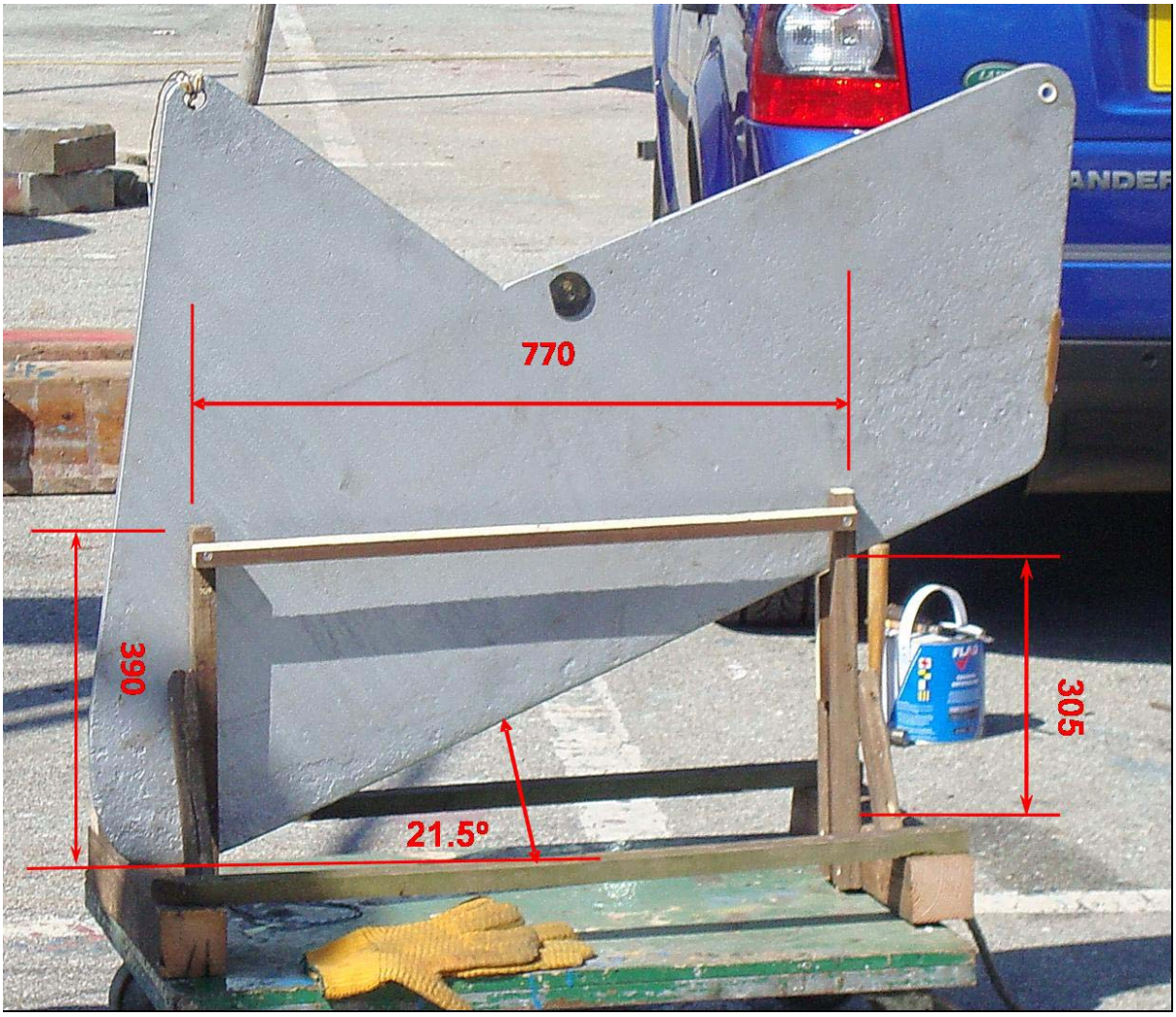

Fig 16: Centreplate support cradle.

With everything in place, *Winkle* was lifted from her trailer and the centreplate positioned below the keel slot.

During preparation for re-fitting, two light lines, one aft, one forward, had been dropped down the case from within the boat. The aft line was attached to the free end of the plate winch rope so that it could be pulled up through the case and fed onto the winch ready to lift the centreplate into the boat. The forward line was a continuous loop running from one case bolt hole (inside the cabin), down the slot, through the bolt bush in the centreplate, then back up the slot to exit into the cabin via the other case bolt hole. It was intended as a guide to show where centreplate and case bolt holes were as the plate was slid home. Be sure to use a very thin line for this purpose – whipping twine is ideal - as clearance between the bush and case sides is very small, barely 3 mm total, and anything thicker will be cut. I speak from experience as the line we used was too thick and was neatly cut as the plate slid up the case.

Once the plate is well into the slot someone needs to be on board to attach the hoist rope and insert the pivot bolt, which should slide in easily provided all three holes are in line. Luckily, the loss of the forward line did not cause any difficulty and we obtained almost perfect alignment at the first try. With the bolt in place the centreplate was hauled up and down a few times to check all was running smoothly, then, after a final tighten of the bolt, *Winkle* headed for the water. Having heard tales of re-fitting taking up to two hours we were amazed to find that the whole installation had taken little more than 15 minutes from *Winkle's* first lift off the trailer. By the end we had attracted a fair number of onlookers, keen to know just what these mad Shrimper owners were up to. My particular thanks must go to Steve Kane (*Percy* 264) for acting as external coordinator (I was inside the boat during the latter stages) and Trevor Heritage (*Jessie May* 882), who was the official photographer. Following is a selection showing the re-fitting sequence.

Fig 17: The boat hoist arrives

Fig 18: Plate brought to boat & guide lines attached

Fig 19: Lining up

Fig 20: Lower away - fore & aft plate tips enter the slot

Fig 21: Half way in - forward edge buffer just entering slot

Fig 22: Plate almost fully in

Fig 23: Plate fully in & pivot bolt being fitted. Note small clearance between support frame uprights & underside of keel.

Fig 24: Job done & ready to launch

Fig 25: Suppliers, Costs & Timescale (Autumn 2011)

Process	**Supplier**	**Cost**	**Timescale**
Shot blasting *Used by other owners & Convenient for Wessex Galvanizers*	QSE Metalblast Ltd, 11 Cowley Road, Nuffield Ind Estate, Poole Tel: 01202 672152	Minimum charge, about £40	About 1 week, Delivered early November,
	Hi Tech Surface Treatment Ltd, Unit B, Deacon Trading Estate, Chickenhall Lane, Eastleigh, SO50 6RP Tel: 02380 611789		
Galvanising	Wessex Galvanizers, Tower Industrial Estate, Eastleigh, SO50 6NZ. Tel: 02380 015266 & 02380 629952	£103 inc vat. for any number of items with total weight between 51 kg & 125 kg	One week. Delivered 9 November, collected 14 November

Total costs of centreplate refurbishment - about £145. (Shot blast clean off, re-galvanising & new fastenings for fittings)

Costs to add – Yard charges for lifting boat to remove & re-fit plate
New pivot bolt & hoist wire/Dyneema line.