Engines

1. Choice of Outboard

Our enquiry concerns good advice on the choice of engines for 'Sukina', which lives in Bembridge Harbour. The current engine, some years old but seemingly serviceable, is fairly bulky 7.5 Mercury. A summary of commercial comments (amongst them Barnet Marine, who responded helpfully) suggested that to get equivalent power - and in our terms 'punch' - from a new engine, we would need 2 cylinders, and that there would be a perhaps not acceptable stern-weight penalty of up to 20kg if we went for a 4-stroke, as we are inclined to, but not doggedly so. Lighter-weight single-cylinder 4's of about 6hp. it was suggested would not have the 'punch' to run home or deal with strong tides. Can anyone give us sensible advice on an engine, or engines, to consider? Outright cost is something of a consideration, bearing in mind the prices towards the upper power/spec end. Two other points: would most applicable/more modern engines have a charging facility, and is this useful? And, given that the present pivoted transom pad seems to leave the prop permanently just under water when sailing, does this suggest mounting problems, or do we have to live with the resultant drag. We noticed some 'Wyches at the rally which seemed to have well tilted motors, and other similar craft in the Harbour also seem able to tilt theirs. Any answers - terse or generous! - welcomed as we are new to the boat after the relative simplicity of day-sailers. *Helen & Peter Hunt (2003)*

Thanks for your enquiry, which is, to say the least, sophisticated and is one I can't answer in the way you want.
You will find all sorts of engines hanging off the back of Wyches and from different styles of mounting arrangements. When I had a Wych, it was driven by an old twin 6 hp Evinrude which had more than adequate power for East Coast tides and just cleared the water when raised. My daughter's boat, also moored here, is powered by a more modern 4hp single cylinder Mariner which, in my view, hasn't enough punch. It has remote controls, can't be tilted and the prop is partly submerged when raised. They are in the process of deciding on a replacement - due unreliability.
I have seen one Wych with a 9.9 hp engine.
Clearly it is desirable to get the prop clear of the water when sailing - but with sufficient degree of immersion when motoring to avoid cavitation etc. Outboards do, of course, come in different lengths. Most outboards have the facility to be tilted when raised, but this does depend on the relative configurations of mounting bracket, engine and pushpit.
I would have thought that most modern engines of 4hp and above would have come with a charging output. If this were a DC output, it would be directly useful in that it could help to keep the battery topped up. If an AC output - as my Evinrude had - one would need to make or buy an appropriate rectifying unit.
Peter Hubbard, whom you probably met at Bembridge, keeps his boat there and is one of our most experienced members. He is not available via e-mail at the moment, but I'm sure he wouldn't mind a 'phone call, particularly if he knew you were joining SWOA... His number is in the Members' List.
I am also copying this to Tony Bromley who may be able to offer more specific comment than I have.
Good sailing. *Barri Hopkins (2003)*

Nothing much I can add to what Barri has already said. It just seems odd to me that the prop is always in the water when the engine is tilted to its maximum. If your engine otherwise runs OK it seems a pity to go to the expense of a new one.

I wonder if it is a 'long shaft' engine but fitted to a standard height bracket. Firstly, I'm assuming you've got a sprung bracket (that rises and falls through about 10"). The top of the engine mounting pad in its running (down) position for a standard shaft engine should be about 15" above the waterline and that for a long shaft about 20". (On a Sea Wych this would mean that, for a standard shaft engine, the top of the bracket in the running position should be roughly in line with the underside of the rubber rubbing strake and for a long shaft presumably 4" or 5" higher. The only other thing I can say is that, for stability, weight at the end of the boat should be kept to a minimum and 4stroke engines are quite a bit heavier than 2 stroke of the same power.

As for the size of engine, people seem to use larger engines now than in the past; I'm not sure why. 7.5hp seems more than enough to me. My own engine is a Seagull Silver Century which I bought nearly 25 years ago as a reconditioned unit. I suppose in today's terms it's the equivalent of somewhere between 4 and 5 horsepower, although Seagull engines worked on a different principle to most of today's, having a large dia. (10") slower revving prop. This gives better thrust but less out and out speed (although plenty for a sailing boat). I've been in some pretty adverse wind and tide situations and it's always coped. I've also used an 8 hp. Yamaha on a 23' boat which was plenty big enough (I know some owners of similar sized boats who only use a 5hp. although that does seem a bit on the small size).
My son uses an electric motor equivalent to about 2hp. on a 16' displacement (1200lbs.) boat. It's just about enough. The original Sea Wych kits usually came with a 5hp. Johnson engine if you ordered an engine at the same time as the kit. One advantage was that it would go into the cockpit locker, which is a security consideration these days. Maybe a lower pitch of prop would deliver more thrust from the same horsepower at sailing boat speeds. Barnet Marine may be able to help on this.

The usefulness of a charging facility would depend on how much you run the engine. I think they usually deliver about 5 amps. If you use your engine as much as I use mine, it would take about three years to charge a 75ah. battery! My own view is that a solar panel is more useful (even this week).
I hope this is some help and gives you some thoughts, but, as you'll probably gather, I'm not too much into outboards. If anything isn't clear, let me know. *Tony Bromley (2003)*

One cause of ‘prop drag’ is where the engine/bracket is mounted too low, causing the engine cover to foul on the pushpit when tilted forward. I had a long shaft, and while it trailed in the water when vertical on the raised bracket I could easily tilt it out of the water. I found my Yamaha 8hp (same weight as the 6) quite adequate for power. It's all about fitting the correct prop for the boat. Perhaps Barnet did not realise they were dealing with a displacement hull. Ron Hale Marine supplied me with one matched to the boat, and with reverse thrust (very helpful in tight corners). One other thing I found when changing to the long shaft, was that it sat too low in the water when the bracket was lowered. Rather than raise the position of the bracket, I cut a ‘mid-way’ slot on the bracket arm. This meant that I could just tilt the engine forward out of the water when sailing rather than raise the bracket. It also meant that I could motor-sail on port tack by lowering the bracket to its fullest extent.
Mike Swallow (2005)

Keels

1. Keel Shoes: why and how to fit them

The keels and hull are a single moulding. If the undersides of the keels become damaged eg. through repeated grounding, drying mooring etc, this can let water into the keels, rusting the ballast. This could crack the keels. In extreme cases, water can percolate up into the hull. *(Ed: there is a photo of a particularly extreme case at p 93).* For this reason sacrificial fibreglass keel shoes can easily be fitted to give some added protection. Shoes are available through the Sea Wych Shop.

Fitting shoes is a simple operation but, like most jobs, it is even easier with a bit of help. It is therefore best carried out about an hour before opening time, with the promise of suitable refreshment for four or five able-bodied volunteers.

First the tricky bit. You have to get each keel three or four inches clear of the ground, but not necessarily at the same time. If you happen to have a crane then you can cheat (and save on the beer fund) but if you have not, then this is one way of doing it.

1. Place the boat on a reasonably level and hard surface. If you work with it on the trailer, this must he well secured and supported.
2. Clean, dry and roughen with glass paper the inside of the shoe.
3. Place two layers of coarse fibreglass matting into the shoe and have ready some fibre-glass resin (do not mix it until the last minute).
4. Using as many volunteers as are available, lift one side of the boat (lifting under the gunwales is easiest). This is not as bad as it sounds as much of the weight will transfer to the other keel. Make sure the boat can't slip sideways.
5. If you are short-handed, you can lift one keel yourself using a bottlejack on blocks or sleepers under the inner hull/keel joint. Use a pad to spread the load.
6. When lifted, chock securely (or check the crew is happy to hold it)
7. Being careful of your personal safety, clean, dry and roughen the bottom couple of inches of the keel and the underneath
8. Mix the resin and pour into the shoe to saturate the matting. Use plenty. A little extra doesn't hurt
9. Lower the boat into the shoe. It is a tight fit so it needs to be done this way round. It is very difficult to push the shoe up onto the keel.
10. Now simply repeat on the other side.
11.Wipe up any spillage. The keels should have squeezed much of the resin out of the shoes.
12 By now it should be opening time. Entertain your volunteers while the resin "goes off".
13.Do not launch the boat until the resin is dry, but once dry, it will continue to cure under water.

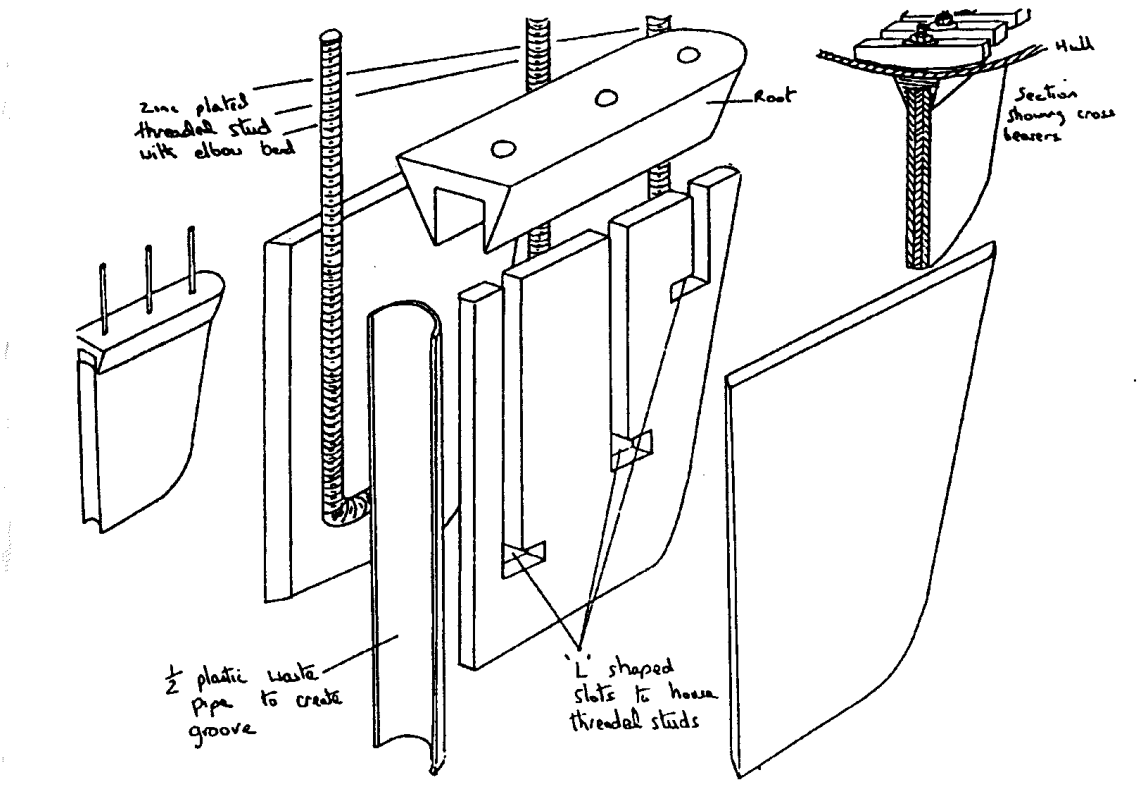
That is all there is to it. Not a difficult job but well worthwhile. The only logistical problem is ensuring that the boat can be lifted or tilted safely. Many hands make light work. If you know a better way, write and tell us

David Clarke (1999)

2. *Adding a Skeg*

As always, drawings are often worth many words, and the general dimensions and construction of the skeg is shown in the sketches. The skeg is fabricated from three panels of 12 mm marine ply, glued and screwed together. The middle section has 12 mm wide slots jig sawed into it, into which during assembly 12 mm diameter threaded zinc plated studs are cemented using epoxy polyester paste, (i.e. car body elastic filler paste).
The studs are L-shaped, done by bending the ends at right angles, to fit exactly into the slots. The studs protrude from the skeg assembly enough to pass through the root piece, hull thickness, and cross bearers, to allow enough for attachment of washers and lock nuts.
The three layers of plywood are bonded together so that the leading edge takes a semi-circular convex shape, and the trailing edge a concave circular grooved form. The trailing edge was formed by cutting a length of waste pipe lengthways and cementing it into position.

The root piece was cut from solid hardwood, and glued down onto the top of the ply skeg. The threaded stud ends and nuts were used to temporarily assist clamping until the epoxy glue cured.

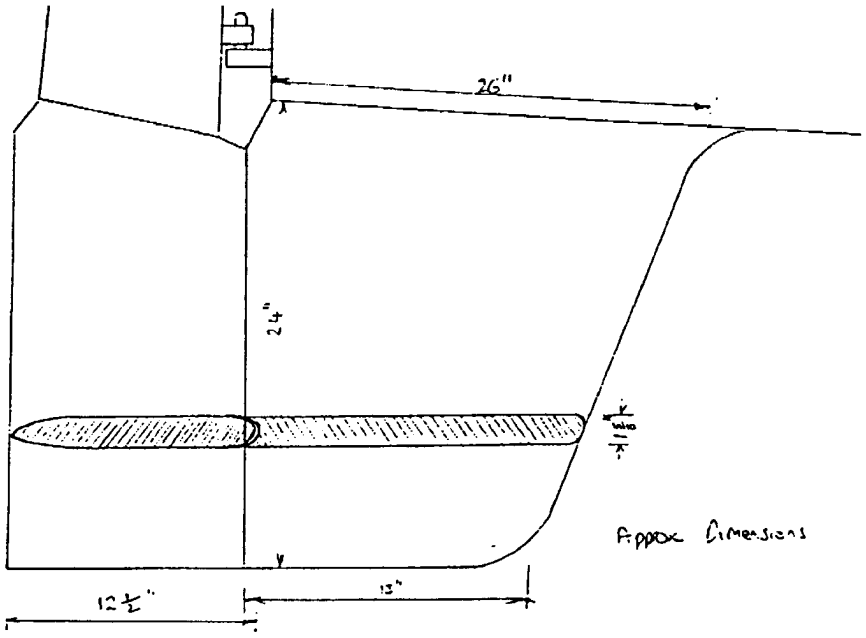


The hull was drilled and prepared, externally on the surfaces that would take the cement and later fibreglass on the underside, and on the inside where the cross bearers would be cemented. The whole unit was coated with epoxy polyester cement on all mating faces, and bolted onto the hull, the 3 nuts and washers were then tightened equally and quickly on the cross bearers inside the hull to ensure that

surplus polyester paste was squeezed out and blended in before it set.

The skeg unit was fibre-glassed to the hull and sheathed with glass fibre. The whole surface was then filled, epoxy primed and painted, followed by antifouling.

The rudder was modified to match, using a length of waste pipe filled with epoxy cement attached to it's leading edge, and two pieces of 1/4" marine ply either side to give it it's shape and strength. The trailing edge was reshaped as shown in the sketch. The rudder was then clad in fibreglass and finished in the same way as the skeg.



Jon Vander-Molen (1997)

3. Keel Shoes - repairing of!

I persuaded my Dad to lift Aquarius up on one keel. Propped her up and commenced the work. (I didn't take her off the trailer to do this.)
I had fitted new keel shoes in the winter and about a foot at the leading edge was destroyed. I cut this section completely away, which left the original keel. This was also damaged.
You probably know that each of the keels is filled with a combination of steel off-cuts from making men's Meccano, and polyester resin. So, if the outside of the keel is damaged and water gets in, very soon you are going to have a real problem as the salt water will rust the metal, this leads to swelling, then eventually the outside of the keel will split. So you can imagine my concern when I saw that the keel had been penetrated!

I cut back the keel to where the water had gone, flushed it thoroughly with fresh water and left it to dry. I did use a heat gun to help the process. Once I was happy that it was all dried out, layers of glass mat were prepared. I then painted the offending area with Cobalt, (this helps the new glass to bond) closely followed by building up with fibreglass and polyester resin. A word of warning - in the summer never mix up more than half a pound of resin at a time, other wise it goes off - and gets very hot!

I built it all back up to the original thickness where I had cut it away, and about 5/16” on the bottom of the keel to match the keel shoes, followed by P38 and finally antifouling. Looks like new! I did both keels that way, so the proof in the pudding, will let you know!

Jeremy Ingram (200?)