“Mods to Tantaliza”

To anyone buying the boat from us:

These boats look small, pretty and almost delicate. Delicate, they are NOT. With a superb hull form, and great stiffness they are powerful sailers and excellent sea boats. What they are NOT is motorboats. The 10 HP Bukh combined with the small, 2-bladed, low drag prop, gives 5 knots cruising in a calm with 6 knots flat out, but, faced with a stiff head wind or chop, she virtually stops. At which point she should be sailed. Which she does brilliantly at great speed.

Do not convert to roller furling jib until you have experienced the use of No 1 Jib in a blow, combined with reefed main, or No 2 jib ditto. These boats are very jib dominated, due to the IOR history. It is infinitely preferable to take in a slab of main, rather than rolling up a roller-furling jib, if you need to reduce sail. The combination of deep reefed main and No1 will take you to windward in force 6 at real speed, with POWER to bash through head seas. In force 7+ changing to the no 2 gives you a smaller jib of a proper aerofoil shape and, even more important, it is tacked down to the stemhead, bringing the centre of effort right down, reducing heeling force while developing real windward power. A roller-furling jib ends up an odd shape and 1/3 the way up the forestay – giving lots of leverage to heel the boat, and is a worse aerodynamic shape. Again, with the set-up as designed, you have real POWER to windward. When tacking in a blow under this rig, tack FAST as you lose steerage way very quickly. A second reef in the main with the same job will take care of force 8+ to windward. NB the Number 2 jib, though of 1973 date, is little used and still strong.

The large IOR genoa does require a sail change if the wind goes light but will provide virtually hull speed windward performance in a force 3.

Tantaliza was built in 1973 and she is a standard E30, as finished by the Peter Webster yard. The engine is a 10 h.p. Bukh. We bought her in 1975. She has been based in North Wales until 1998, and now she lives in Ardfern, Argyll. Her cruising area has been Wales, Ireland, South West coast of England, 3 trips to Brittany, and innumerable to or in Western Scotland. Our cruising is easier now, just wandering around lochs and islands, with no long passages.

Our 2 boys virtually grew up on the boat until they left the nest.

Mods follow:

Cockpit drains/ valves:

The boat came with plumbers brass skin fittings throughout – which were replaced with gunmetal.

Originally, the four ¾” cockpit drains had been brought together to pass through just two ¾” skin fittings. Given the size of the cockpit I regarded this as dangerous. Two new holes were made in the hull, at 1” diameter, with 4 drains, so that each drain could have its dedicated seacock.

Following news of the Fastnet disaster, I was still concerned at the time it may still take to drain a flooded cockpit, and added two “spill” drains, straight through the transom. These are made up from plastic hull fittings, connected by tubes.

Prop shaft:

The rear bearing is white metal, with a grease-filled sternshaft, The forward gland is on a short hose attached to the front of the sterntube, with a feed pipe let in at this point, from a greaser in the cockpit.

The sternshaft turned out to be bent. Also, with a shaft diameter hardly less than the inside diameter of the sterntube, and with the shaft rigidly fixed to the gearbox shaft, and with a flexibly mounted engine, the whole system was trying to shake itself apart.

A new shaft was made out of stainless. This was “dumbbell” shaped, only reaching its full diameter at the ends (stern bearing and forward seal). This allowed some free “float” within the sterntube. At the forward end a relatively crude universal joint was fit, to give some degree of freedom. This universal joint is attached at one end to the shaft, and at its other end to a very short stub rod fixed into the flanged fitting at the back of the gearbox. One end of the universal simply clamps on the shaft, and it started to skid. I then drilled through and bolted it. The Universal joint does not fit absolutely tru on the end of the shaft, and to obtain alightment, some bits of mini-hacksaw blade have been inserted on one side where the flanges connect at the back of the gearbox. TW Marine where I get my stuff says only use monograde oil in the gearbox – which can he the same as the engine (straight diesel 20, still available from specialist suppliers).

The bimetallic construction with the bronze prop necessitated a zinc anode, wired to the engine and to the sterntube.

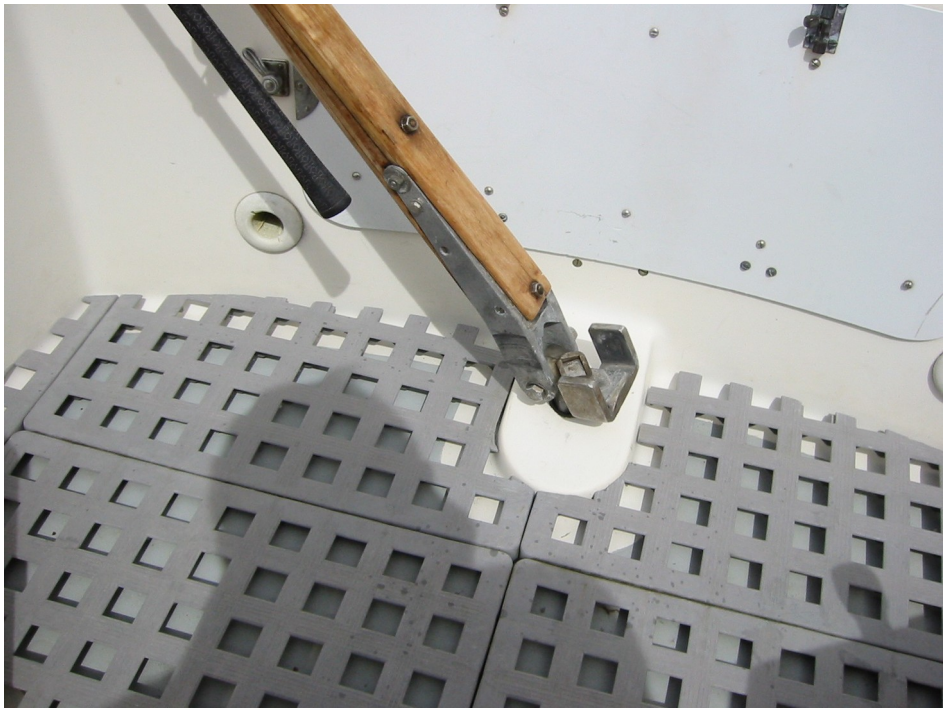
Pictures follow:

This shows the transom drains, from the inside. Incidentally, this shows the old flooring (industrial PVC). It has now been replaced with B&Q patio decking material. Re. the tiller fitting – see later

Transom drain from outside.

This picture shows the horrors to be encountered aft of the engine (10 HP Bukh with dynastart). Note: Braided cockpit drains, crossed over. Black rubber exhaust. Universal joint in prop shaft. Stainless fuel tank made to replace horrible rusted mass, which the original plain steel tank turned into. The “extra” jubilee clips on the drain hoses prevent kinking.

Tiller fitting:
The original very pretty tiller fitting and tiller were already on the way out at 2 years old. A new tiller was laminated up – a bit longer and with a but more curve to it, The fitting was modified with welded “ears” at the top of the rudder stock. See pic:



Subsequently a second tiller has been made (2007), replicating the cast portion of the fitting at the top of the rudder stock, in stainless. (Drawing available). The original has been kept as a spare tiller. I was unhappy about the danger of cracking in the, now very ancient, cast aluminium “ears” on the original fitting, since tightening
flexed them.
Picture:

Anchoring arrangements:

Even in 1973, South Coast boats seemed to rarely use their anchors – and Tantaliza was constructed accordingly. The original Meon anchor was in its moulded locker on deck with a short length of chain. A rope was kept below that could be shackled to it. The previous owners had only anchored once in the 2 years they had the boat, having mainly used her for racing.

I did not want to make a chain locker with a tube to it – as this would constrict the forward berths. Anyhow, we have always had good results with chain plus springy nylon - I like the shock absorbancy, though there needs to be a respectable length of chain. We have a plough, and also carry a replacement for the original rusted out Meon, plus warp, stowed in the anchor locker. 2 good sized anchors each with 10 metres of chain plus nylon. If it comes on to blow hard we routinely put out two, spread about 25-35 degrees apart from the bow. This inhibits "hunting" and give a lovely feel of bullet-proofness. (due attention to possible wind swings). In wind over tide conditions, a weight is hung on the warp (one anchor only), consisting of a round fender filled with cement and lots of bolts (cement alone is too light). This weight is in the starboard stern locker.

In 2015 a "Quick" windlass was fitted Ref G600ud 500W 12V 08MM. A nightmare to install. For wiring see wiring diagram in this file of computer memories. Pulls chain and warp ok, but the plaited warp is just a bit thick to get into the "jaws" of the gipsy when not under load. Light pressure on the plastic doo-hickey at the top takes care of that, but wears the plastic. Plan for winter 2017-8 is to mae a strip of stanless and attach it to the "face" of the plastic "doo-hicky", which should have been made of metal). Better then the "doo-hicky" is a good head wind or putting the boat into a reverse to pull the rope into the gypsy. If doing this throw the engine back into neutral as the joint between chain and warp comes over the gypsy. NB MUD is an issue. You really need someone with a broom and bucket to de-mud a muddy chain before it goes into the chain locker and takes the mud with it. . However, once the anchor is off the bottom the boat can be motored around the place with anchor and chain dangling to rinse them off.

The windlass was mounted where the mooring cleat had previously been situated. Moving the cleat meant putting it over an area where the deck was of balsa core construction, and thus re-enforcement was needed. This was done by gluing 3 layers of 5 mm plywood under the area – using epoxy and bolts to pull it into place under the cambered deck. The cleat was then mounted on a rectangle of stainless, with another underneath, and with additional bolts at the corners of the rectangle. So far the windlass has worked well but its winch drum produced instant riding turns. A new winch drum has been made of a different shape, modelled on other winch drums on the boat, and machined from a solid slug of marine grade stainless. . It works. This issue is was followed up with the makers who said that the winch drum should not be used as a power winch (in which case why have it?). You can use the main halliard now to take a man up the mast (engine running for watts) and make sure you taken the "lifting" end outside of the lazy jacks or you will get a tangle. In theory the same arrangement could pull a man out of the water.

Here is the windlass, with the original windlass drum .

And here is the windlass with the new drum::

A “tippy” device has been fitted at the bow roller, which has been modified to take it. This was from Plastimo and makes the anchor self parking.

In windy weather there is a danger of abrasion of the anchor warp in this device. A piece of plastic pipe (slit) is in the starboard side cockpit locker and can be fit over the warp at the roller, winding the strings round to tighten it.

The following picture shows the underside of the deck in the forepeak, with the re-enforcement.

And this is the “tippy” device at the bow:

In 2015 a “pack-a-main” arrangment with zip and lazy jacks was fitted at the boom.

Arrangements at stove:
Crash bar etc:

Not fitted by Peter Webster. Once, when bashing into a force 5-6, about 10 miles from the Isle of Man, a young and pretty crew member fell against the stove, which had a pot of boiling water on it. The water filled her Wellington boot. Very luckily she has no permanent scarring, but a crash bar was quickly fit after this. It is simply aluminium tube, inserted through 2 holes. The end of the tube had notches cut in so the ends could be hammered over to make flanged ends.
Note also the aluminium strap over the aftermost cooker pivot – another post "Fastnet Gale" modification. Also frame and Perspex cover over switchboard, to avoid the switches getting knocked off.

Mast and standing rigging: (A big subject)

The standing rigging was due for a second renewal. Since the mast had not been out for years, I asked the yard to take it out (then Dickies at Bangor, N Wales). Aluminium rot is not uncommon on keel stepped masts, where they get into the bilge, and I wanted to look at it. To my horror the yard reported the mast as sawn part through. The causes were complex.

In "Tantaliza", at least, the hole for the mast in the deck is slightly off centre. In fact one side of the boat is higher than the other, so the deck is slightly sloped. The mast itself is to some extent "deck stepped on the keel". I had seen a later model of the E30 with cracks around this unreinforced mast hole, where the mast had been firmly locked in place with wedges. I used soft rubber, and, where the mast came close to one side of the hole, I packed in old car inner tube.

The inner shrouds at this time were attached to the coachroof side, though the cap shrouds are fixed half way out across the side deck, with large knees moulded under them at the cabin bulkhead. The angle made by these inner shrouds at the mast was tight, and even with a lot of shroud tension, when at the mast, reefing, with the boat punching into a sea and the main flapping, you could feel the mast shake.

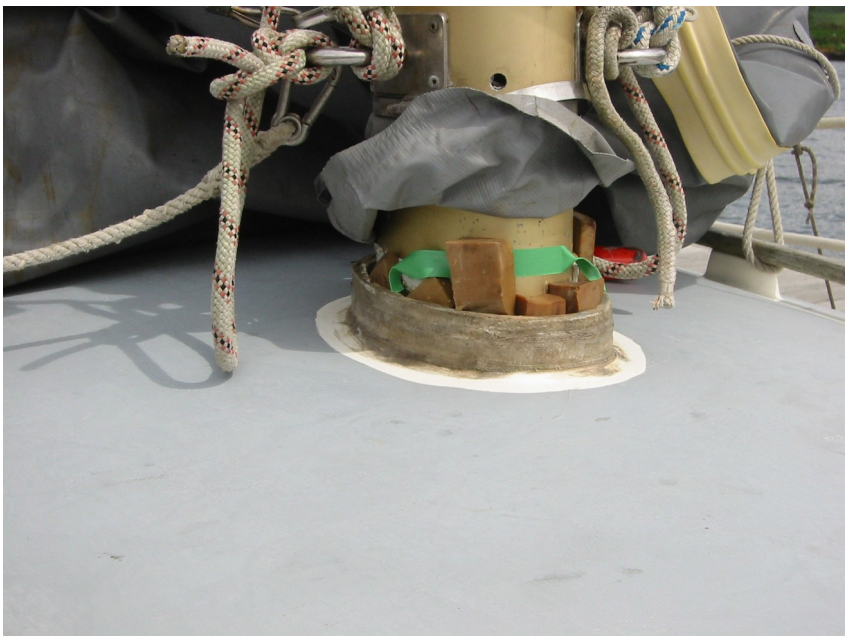
The inside of the “spigot” on the deck, where the mast protrudes, had a molded lip on the inside at the top. This “lip” had sawn through my inner tubes and had been happily sawing through the mast. At this point there was a groove covering most of the Port side of the mast and about 2+ mm deep.

The yard originally said it could splice in a new section. However they then said they could not find any extrusion of the right cross-section (modern extrusions are different, with a flat back). So it was a new mast and lots of money.

Here is a picture of Tantaliza, with her mast sawn part way through, thrashing into a wind rising force 8, that, I am told by people with anemometers, reached force 9, all shortly before this fault was found. Those who have not had to sail E30’s into such winds will be consoled to know that “Tantaliza” happily beat up the Menai Strait against this, going like a train into a wind-over-tide sea, and with the final reef in her main, and the old style removable No 2 jib, arriving safe and sound, but with her dodgers blown out. Mr. Thomas is to be congratulated.
(Some of the jib hanks were also starting to pull out of the luff. I got these fixed, and doubled up on them – and have avoided rolly-polly jibs ever since.)

However, all this led to a number of structural modifications.

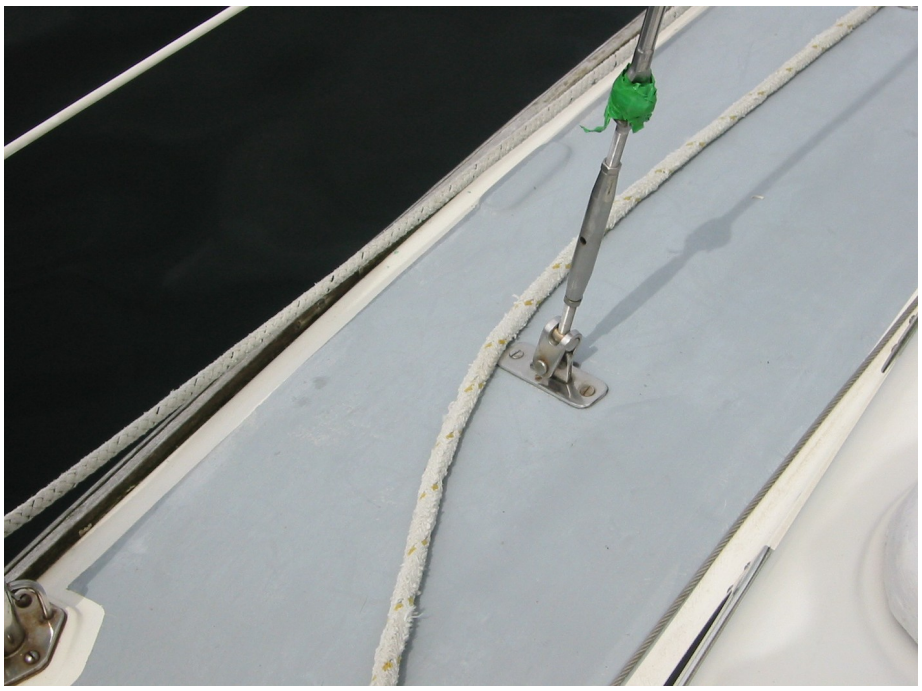
Firstly the “spigot” in the deck was reinforced on the outside by winding resin-soaked glass tape around it. The “lip” was then filed off the inside, using a coarse, round-backed file. Apart from anything else, this leaves more room for rubber packing on the port side.



The next thing was to improve the angle of the shrouds. I did not want to move everything outboard to the gunwale, but to bring the inners in line with the cap shroud at deck level.

The new arrangement looks like this from above:

The forward chainplates were relatively easy, being taken down the bulkhead between the loo compartment and fore-peak. This brings them a little forward of the original position, reducing the angle through which the spinnaker pole can swing. However we do not race, and for cruising with spinnaker, the present arrangement is good enough. See below for the fitting at deck



Arrangments below consist of a chain plate down the bulkhead (R.H.S. of this picture):

This is backed up by a strip on the other side:

My arrangements for the after inner shrouds would give Mr Thomas the horrors. Ideally I should have fit a large knee here, but it would have meant completely hacking up the inside furniture.

I simply bolted two “U” bolt type chainplates through the deck at side. However this was after stiffening up the deck underneath by fitting two thicknesses of 1” ply, three feet long, glued together. They were put in place, and the whole thing then tightened. After this, silicone sealer was smeared all around the edges where these “boards” met the deck. Holes were then drilled in the deck above and the whole area was flooded with epoxy resin. This includes the voids between the board and the underside of the deck, and the sandwich construction itself.

To provide a little additional stiffness, I tried to bring the locker construction into play. The bottom edge of the lower locker is now backed up by 2 lengths of angle iron, assembled to make a “U” section channel, duly epoxy coated. This is bolted at the ends into the bulkhead (forward) and the ply end of the locker “block” aft. (look 2 pictures up and you can see the backing plate from this, on the left.). This is still slightly psychological, since the “U” section bar will easily flex. I tried to use the whole locker box . Realising the small vertical strips in the lower locker will go into thrust, and since they are only thin and could “trip” under load, they were backed up by wooden blocks. You can see the screw heads in the following picture. The whole thing is tied down by a second rigging screw underneath, as the picture shows. This rigging screw simply passes through a hole in the bottom of the upper locker.:

The next picture gives a closer view of the doubling under the deck (the small wood pad brings the thickness to 3” at this point)

 :

There is no evidence of any flexing in this area, and it is amazing how the tension on the inner shrouds has been reduced, with no slackening of the lee shroud, and the mast now firm and solid.

“U”-bolt for Backstay.

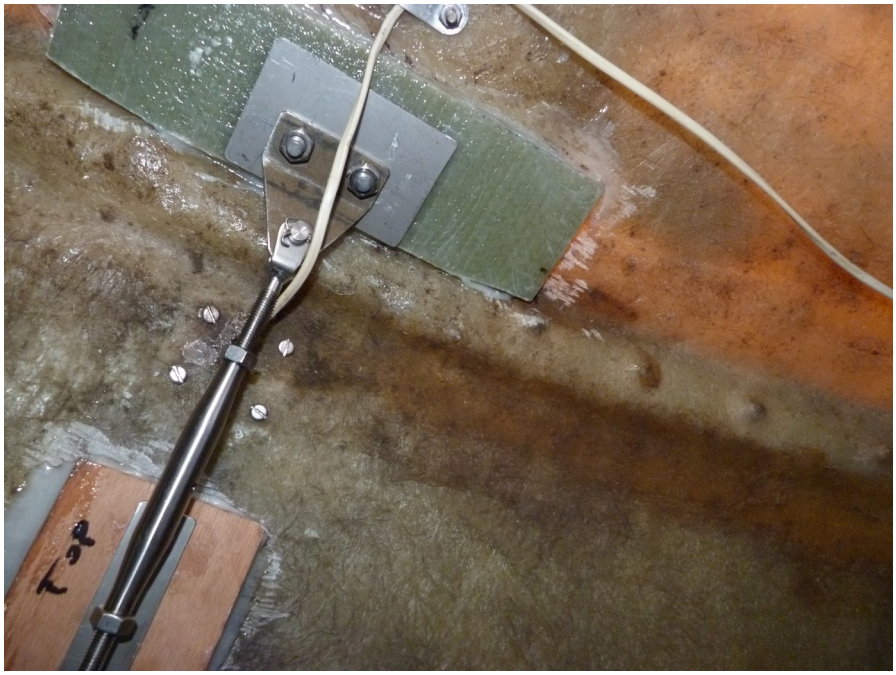
In 2015 cracks appeared in the deck around this. On examining it more closely, this arrangement should have given Mr. Thomas the horrors. The cracks seem to be in the gel coat, not all the way

through but the yard said this needed attention. There seemed some thin doubling on the deck in the area plus lots of GRP underneath but nothing like a chain plate to take the load. Pretty tacky – how has it held up? (The yard say this is nothing compared to what they do with modern boats).

A slab was bought of a material resembling a thick sheet of GRP lay-up. The underside of the deck in this area was ground, as was a vertical "strip" area on the inside of the transom

This slab was the bonded in place under the damaged deck using a lot of thickened epoxy (the surface on the under side being very uneven). A strip of plywood 15mm thick was bonded down the inside of the transom. A new "U" bolt with longer "legs" was put in with plate behind this and behind that a stainless "tab" with a hole in it. A further stainless strip was bolted down the inside of the transom over the plywood. A second stainless "tab" was bolted over this, and the two connected with a rigging screw, screwed tight.

The following picture shows the underside of the deck after the modification:



And this shows the inside of the transom:

Stiffneners in lockers:

Angelsey,where we used to sail, is surrounded by strong currents and a number of races, greater and lesser, which you sometimes have to beat through. On occasion she has fallen off a wave onto her lee bow with a “crash” that sounded more like you had landed in the middle of the M1 from a height of 100 feet. Most boats of this era have a longitudinal stringers molded in. The E30 does not, though the furniture provides some degree of stiffening forward. However in the 2 lockers in the loo compartment, there is no longitudinal stiffening between the keel and the deck. Here I glassed in pieces of wood, Port and Starboard, to stop “panting”. I repeat the previous picture:

Stainless weld failure: warning:

A few years back, when I leaned against a stanchion while loading the boat, the thing simply fell over. The weld at the base had fallen apart. This has been re-welded – but is a wonderful demonstration of what can happen to old welds in Stainless.

Bow Roller and forestay fitting:

I was never very happy with this. It is a crummy design. The vertical plate taking the forestay is butt welded to the plate on the deck. The whole thing is then put in tension, and rocked from side to side when the boat tacks. All this while being subjected to about the most corrosive natural environment known to man.

At 10 years a hairline crack had started to appear at the front of this weld. I removed the fitting and had it re-welded.

However, after the above incident with the stanchion, I decided to make the whole thing bullet-proof. Modifications followed, including a strip from this plate down the stem, and 2 stainless knees welded in on the Port side. The plate down the stem had later to be removed to enable the bow roller to be moved to the port side and space to be cleared to accommodate the “tippy” device that makes the anchor self-parking. The stemhead fitting needs to be monitored for cracks but should be ok with the knees.

Has anyone any experience with limited life on the “U” bolt chainplates aft and Port and Starboard?

Note: Keel bolts:

I read the notes on Snowbird's keel bolts with interest.
After 10 years I replaced all those I could get at on Tantaliza. Just routine, and nothing visibly wrong – but always some worries about crevice corrosion with stainless. However some of the forward ones are inaccessible under the molded plastic cabin sole provided by Peter Webster. Can anyone advise how to get at these? Incidentally I have been removing, examining, and replacing the accessible ones, one at a time each year. All is AOK and I must allow that Peter Webster's black goo is still gooey after all this time.
Re-torqued to 90 ft lbs. Less than "Snow Bird" but same as the Bukh cylinder head bolts, which are somewhat thinner but high tensile steel, vs the stainless keel bolts.

Note re. Paint:

Tantaliza was originally green. She was sprayed with 2-pack PU about 40 years ago, which quite quickly faded. 15 years back before last we hand painted her. Preparation was lots of wet-and dry. Paint was "International" Interlux Super – the least exotic grade, normally used on wooden boats. It is also not a 2-pack, so it should be easy to touch up. Application was by small roller followed about 3 feet behind by a smoothing brush made from PU foam – done by 2 people. We were extremely pleased with the result. Incidentally someone in the yard lent us a tub of some additive, from which we tipped a small amount, and which caused the paint to level really well. (Kolutrol?). Repainted topsides 2007. Again (with prior sanding back by the yard) in 2016. This was given a light overcoast 5 years later. However the paint films seemed to be separating after 5 years so the whole was sanded by the yard and painted again in Spring 2016.

The bottom has had 6 coats of black VC tar – after an appalling saga with Liverpool Marina which I will not bore you with. The place is under new management, anyhow. IN about 2004 or 2005, the antifouling was scraped off and 2 more coats of VC tar applied before re-antifouling.

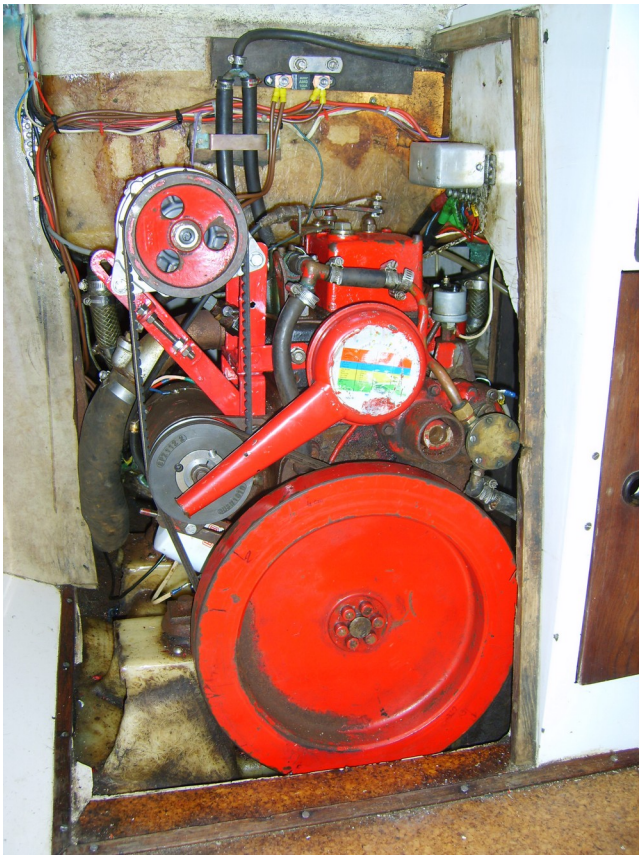
Note re. rudder fitting at foot of skeg

The Peter Webster type had the rudder supported on a simple stainless tab, sticking out at the back, with a hole for the bearing. This looked flimsy.

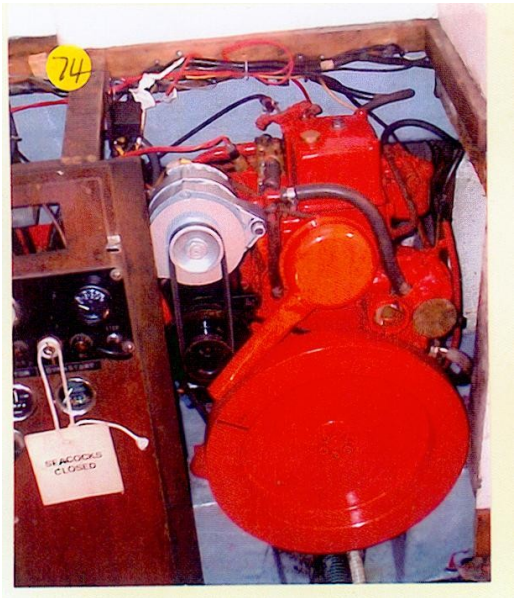
I have beefed this up by taking a strip of stainless about3/4 inch wide, bending it to a "U" shape, and welding it around the edge of the existing support, so that this old support has a sort of flange at its lower edge – ends welded back to the main support at the base of the skeg. Pic taken after removing fitting during scraping of old antifouling. The original nylon bush was replaced with a piece machined in Tufnol.

Addition of alternator (Spring 2007)

An alternator was added in tandem with the dynastart. The picture should be self-explanatory. The double belt wheel on the dynastart (with “taper-lock”, centre machined out to reduce thickness by 5 mm to allow for available shaft length) is somewhat smaller in diameter than the original wheel, which will increase the revs somewhat. The wheel on the alternator is the original wheel of the dynastart. This is the job complete.



Bukh used to sell a conversion kit to do this but that was aeons ago – dimensions of original double wheel wheel somewhat different. The following pic shows a Bukh conversion job, NOT OURS, courtesy of an EOA member:



- Much tidier but I could not source a double wheel where the INNER aligned itself with the flywheel – hence the “Eiffel Tower“ arrangement I have made.

The Dynastart is now taken via the control box to a dedicated car-type battery, for engine starting only, via an isolator switch under the head of the quarter berth, beneath the chart table;.

The Alternator is taken via a 100 amp fuse, just above the engine (behind a Perspex plaque, just above the engine - Plaque not yet fitted in photo), to a leisure battery, which then provides the power to the switchboard via a "buzz bar" sited beneath the sink. This battery also has an isolator switch beneath the chart table, which isolates ONLY the services, but DOES NOT cut out the link to the alternator. This is to avoid the danger of starting the motor on the other battery, with the alternator out of circuit, which could destroy the alternator. This is in line with the wiring diagram for the later Bukh engines that had alternators, and according to advice from the boatyard electrical types.

A third isolator switch is immediately below the other two. This is the common earth to the two batteries. This cuts out both batteries simultaneously, providing safety if working on the engine, since otherwise there is a live lead at all times to the alternator battery.

2 charger sockets have been arranged close to these isolator switches, to enable battery charging.

A separate lead goes from the 100 amp fuse above the engine to a contact breaker/push-button switch on the switch board to give power to the alternator when the engine is running – with an in-line "charge" light next to the push-button switch.

Batteries are mounted on a board which is then slid into the corner of the bin under the head of the quarter berth, where they just fit. 2 bolts protrude though holes in the vertical outer edge of this bin, with nuts on the outside, to hold the whole assembly in place.

Switch off both isolator switches and the common earth before doing work on the engine!

Effective RPM:

Diameter at flywheel approx 33 cm.
Effective mean belt diameter at dynastart estimated at 12.25 cm (old set-up) and 11 cm (with the new double wheel)
Mean belt diameter at the alternator (old wheel moved upwards) 12.25 cm

RPM Engine	RPM Dynastart		RPM Alternator
	As originally fitted	New set-up	New set-up only.
2000 (cruise)	5176	6000	5176
3000 (max)	7764	9000	7764

Engine rebuild, winter 2007-8:

Having spent many years running and maintaining an old motorcycle I decided I should be able to take on a Bukh Diesel. This I did with the help of Willie Webb of Webb Marine, at Furness Vale, Stockport, who has done my spares since 1975. I managed everything myself except the removal of the forward pinion of the crankshaft, requiring a puller I did not have, and the insertion of white metal main bearings.

Not all parts have to be Bukh original. IN some cases, Bukh simply bought commercial components and re-labelled them. A diesel injector and pump service company in Newcastle, where I live, took care of these parts together with the re-conditioning of the injector and injector pump.

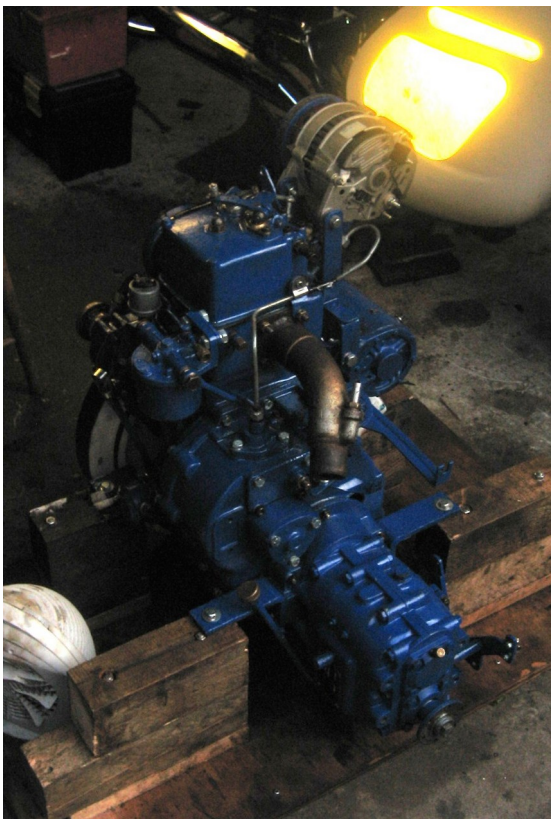
Jobs were:

New piston (**very** worn with a broken ring!)
New cylinder liner
New main bearings (white metal)
New big end shell (All journals still within spec)
New fuel lift pump (from diesel supply place in Newcastle)
Reconditioned injector and injector pump (ditto)
Valves ground
Valve springs not replaced, having been replaced recently
Governor bearings examined, based on TW Marine advice, and found OK.
Timing of injector and valves checked.
New bearings in way of water pump.
Original water pump drive chain checked for stretch and refit, ok.
New crankshaft oil seals.
Unnecessary exhaust manifold removed and exhaust connected directly to back of cylinder head.
Water pump OK
Thermostat OK
New "O" rings thoroughly including at oil pump.
Small end bush OK.
Oil Pressure relief valve OK
Replaced every fastening in sight.
Checked clearance valve seats to piston and for recessing in head.
Cleaned up (incredible mess) and repainted in Epoxy (blue!)

Its running like a top. Also no oil consumption and about 4 hrs to the gallon of fuel.

Only other comment is that, compared to the Norton Motorcycle engine, everything on a Bukh is absolutely massive. With weight of 150 KG plus 10 BHP it gives a whole new meaning to power-weight ratio.

See pics



Dynastart and control box failure:

In 2013 the control box failed and, in turn, burnt out the field coil on the dynastart. A rewiring job was done by http://www.dynamoregulatorconversions.com/. , and a solid state controller to replace

the original. So far all working well, but a costly disaster especially as it had also destroyed one of the batteries!

However in 2019 the “back” bearing of the Dynastart collapsed with appropriate noises. With the yard’s help we bodged a replacement from one they had with the right O.D. but 2 mm excess I.D. (they made a machined sleeve to make up the difference). The failed bearing had clearly received no attention from the rewiring people and had become a black rusty mess. Probably not greased since 1973. In the winter a correct bearing has been fit to replace the high-tech “bodge” of the summer.