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Thorough surveys and practical reports on GRP/FRP, steel, aluminium and wooden boats
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General Notes

The survey was carried between 24th and 26th February 2025, afloat and held in the slings ashore at Marina Rubicon, Playa Blanca, Lanzarote for _____, (the Client) by the surveyor, Andrew Edmond, Compass Marine Yacht Surveys LTD (www.compassmarinesurveys.com).

Recommendations and suggestions defined:

Recommendation (Level A) - Items that should be addressed before vessel is used or the item relied upon or within a specific time period. They relate to defects with a high risk of failure and moderate to serious consequences for the safety of the crew and the vessel.

Recommendation (Level B) – These require attention in the near to medium term or a given time span. They pose less imminent risk but are likely to cause problems in future, with moderate to serious consequences for the safety of the crew and, or, vessel.

Suggestions may also be made regarding items that may lead to impaired safety, value or convenience in the future. Some suggestions may only have consequences for appearance or comfort of crew. These can affect value.

Where recommendations or suggestions have been made, quotations for the work should be obtained prior to completion of the sale and any significant work checked by a competent and independent person once carried out. Whether or not a recommendation or suggestion is made or at what level, there is no guarantee that an aspect or component will not fail unexpectedly.

Conditions of Survey

Moisture readings were taken after being ashore for approximately 2 hours. A Trammel Skipper meter was used.

Please see Section K on scope and limitations.

The mast was stepped so mast and rigging could only be inspected from deck level. Any defects found above that level were seen using a high definition x20 optical zoom camera. This does not allow full examination aloft..

A sea trial was carried out on 26th February and, on 26th and 27th February, the surveyor met with and spoke with contractors that might provide estimates for the repair works needed and be chosen to complete the works. These discussions focused on the hull and keel repairs. Subsequent to the completion of the report a list of works will be sent to the contractors requesting estimates.

The vessel was seen washed down below the waterline.

The client did not require a valuation.

Before the inspection ashore began, the hull around the supports was examined for evidence of distortion and adequate, secure support. No issues were seen.

The lockers where all full of gear. Not all of this was removed for inspection and thus some areas were not inspected.

The vessel had been afloat in the marina for some years with little time ashore.

No special conditions affected the survey other than as mentioned in the text.



Summary

The Nautor Swan yachts are highly regarded across the globe and there 411 (an extended 41) is no exception. The effect of the extension to the hull can be seen on the lines forward of the transom.

The boat sailed nicely during the sea trial. The visual condition and aesthetics below deck are of a classic yacht. Varnish work was excellent, headlining and upholstery in good condition and a relatively new and lightly used 4 cylinder 108HP Yanmar engine.

However, there is a fairly long list of recommendations, many minor as might be expected of an older yacht. Amongst the recommendations are some relating to serious repairs now required.

These include repairs to the rudder, keel and the hull including delamination along longitudinal stringers on both sides below the waterline.

Blakes seacocks need servicing, two gate valves need replacing and a number of hose clips and hose need changing.

Standing rigging need replacing and shroud chin plates require inspection behind fitted panels.

A microbial infestation may have caused the engine to enter safe mode during there se trial. This should be confirmed by an engineer with the correct diagnostic software and there fuel tank, filters and hoses need to be drained, cleaned and flush with clean fuel which should be treated with biocide and preventative chemicals.

Work was needed to the exhaust system and some minor work was needed to the raw water cooling system.

Some safety equipment was needed including a plotter.

Work was also needed to the gas system. The holding tank and the calorifier are in need of replacement.

Recommendations

Hull and topsides

Recommendation (Level A) - *The 'osmosis' and delamination along the stringers should be repaired appropriately. The surveyor can provide a specification for the repair if required. Please note this repair is likely to be costly and further issues, including delamination could be found as the repair proceeds. For repairs, it is considered safe to move the boat in calm to moderate seas and winds not exceeding Force 4 on the Beaufort Scale to another marina on the island: either Marina Lanzarote in Arrefice or Puerto Calero Marina.*

Through Hull fittings

Recommendation (Level A) - *Service all Blakes seacocks.*

Recommendation (Level A) - *Replace clips on manual bilge pump outlet and WC/holding tank outlet, and clips and hoses on engine air intake drains in lazarette.*

Recommendation (Level A) - *Fit double clips to all hose attachments below or close to the waterline, notably the water maker intake and shower/heads sink outlet.*

Recommendation (Level A) - *Replace the brass T connector and ball valve at the WC intake.*

Recommendation (Level A) - *Replace the cockpit drain gate valves with bronze ball valves fitted with grease nipples.*



Recommendation (Level A) - Replace the gas drum drain hose and fit new double clips at each end.

Recommendation (Level A) - Remove the redundant through hull fittings below the main cabin bunks and the forepeak sole board.

Ballast

Recommendation (Level A) - Remove the keel, inspect the studs for crevice corrosion, replacing if necessary. Repair the crack at the trailing edge. Refit making good the seal at the join and the fairing.

Steering

Recommendation (Level A) - Remove the rudder, cut open, removing the leading edge, inspect the stock and tangs and repair as necessary, ensuring the stock is laminated to the leading edge and the tangs to one side of the blade and sealing where the stock enters the blade.

Recommendation (Level A) - With the rudder quadrant removed, inspect the rudder tube joint to the hull and repair as necessary.

Recommendation (Level A) - Stow emergency tiller where it can be deployed quickly. Test at sea.

Deck

Recommendation (Level A) - Repair or replace the fourth latch on the forward sliding hatch.

Recommendation (Level A) - Refit and secure main cabin hatch hinge pin.

Recommendation (level A) - Mouse shackles attaching guard rails to the pushpit.

Recommendation (level A) - Fit jack stays before going to sea.

Rig

Recommendation (Level A) - Replace corroded fastenings on the forestay stem head fitting and chain plate and at the staysail stay chain plate.

Recommendation (Level A) - Fit a correctly sized washer over the clevis pin at the base of the forestay and staysail stay to prevent the split pin from being cut.

Recommendation (Level A) - Replace C rings in clevis pins at staysail stay toggle with split pins.

Recommendation (Level A) – Inspect the shroud chain plates on both sides and replace as necessary.

Recommendation (Level A) - With the mast unstepped, inspect fully at all fittings and at the foot of the mast and repair if necessary.

Recommendation (Level A) – Replace all the standing rigging unless an invoice is seen showing it is less than ten years old.

Recommendation (Level B) - Restore the UV protection at the ends of the spinnaker boom.

Recommendation (Level B) – Replace the genoa furler lower swivel.

Recommendation (Level B) – Service main sail in-mast furling.

Recommendation (Level B) – Allow to replace some of the running rigging

Recommendation (Level B) – Replace the UV strip on the working jib. Allow to replace the working jib.



Recommendation (Level B) – Service all winches and clutches on mast.

Engine

Recommendation (Level A) – Investigate and repair the cause of the engine entering safe mode.

Recommendation (Level A) – Replace the engine exhaust silencer aft of the engine

Recommendation (Level A) – Replace the aft section of the engine exhaust hose and introduce anti anti siphon loop.

Recommendation (Level A) – Replace the raw water hose from the heat exchanger to the anti-siphon vent.

Recommendation (Level B) – Service (unblock) the anti-syphon vent on the raw water feed to the exhaust.

Recommendation (Level B) – Fit double clips to all exhaust and raw water hose connections unless tail pipes are too short for this.

Recommendation (Level B) – Re-fit the sound proofing in the engine cover.

Fuel system

Recommendation (Level A) – Clean and flush the tank. Replace fuel and treat with biocide and prevention chemicals.

Stern gear

Recommendation (Level A) - Inspect the propeller shaft for pitting at the stern seal and the cutlass bearing.

Safety and other Equipment

Recommendation (Level A) - Layout the bower anchor chain for inspection.

Recommendation (Level A) - Mouse the anchor to chain shackles.

Recommendation (Level A) - Test the windlass and clutch.

Recommendation (Level A) - Confirm the windlass has a circuit breaker fitted.

Recommendation (Level A) - Fit double clips to all bilge pump hose attachments.

Recommendation (Level A) - Relocate the stern light to that is is not masked by the life raft and Duogen.

Recommendation (Level A) - Confirm the anchor light and tri-colour are working.

Recommendation (Level A) – Fit three new fire extinguishers with a combined rating of at least 21A/144B.

Recommendation (Level A) – Fit a fire blanket at the galley that complies with the BSEN 1869 standard.

Recommendation (Level A) – Fit a smoke alarm.

Recommendation (Level A) - Fit batteries to the horse shoe buoy, fit a dan buoy with a light, replace or service life raft.

Recommendation (Level A) - Carry appropriate safety equipment including flares and lifejackets.

Recommendation (Level A) – Carry a fog horn and day shapes.

Recommendation (Level B) - Fit an electric bilge pump with an automatic function as well as manual function.



Accommodation and on-board systems

Recommendation (Level A) – Replace the gas drain hose and clips.

Recommendation (Level A) – Improve the seal at the lid of the gas bottle drum.

Recommendation (Level A) – Terminate the flexible hose at the drum side with a rigid fitting on the side of the drum and copper pipe outside of the drum.

Recommendation (Level A) – Replace the flexible hose at gas locker and the cooker.

Recommendation (Level A) – Repair or replace the base of the gas bottle drum where there is pitting.

Recommendation (Level A) – Replace the copper gas pipe.

Recommendation (Level A) – Store the spare gas bottle where any escaping gas can flow freely and safely overboard.

Recommendation (Level A) – Fit a gas alarm.

Recommendation (Level A) – Fit a set of MCBs to the 230V system.

Recommendation (Level A) – Fit a socket for the shore power cable in the cockpit and shorten the cable to remove the damaged section.

Recommendation (Level B) – Allow to replace service batteries.

Recommendation (Level B) – Replace seal on fresh water filler unit.

Recommendation (Level B) - Replace the valve below the forepeak sole.

Recommendation (Level B) - Replace calorifier.

Recommendation (Level B) - Replace the watermaker membrane and test.

Recommendation (Level B) – Replace the holding tank with an HDPE tank and hoses and fit a larger diameter vent.

Suggestions

Consider

- applying a bead of adhesive sealant to the flange nut on the transducers internally.
- repairing the plating where it has parted from the teak planking
- repairing the corroded parts of the mast using aluminium sheathing.
- fitting a halyard diverter to the mast
- mousing all shackles unless removed regularly.
- servicing the manual bilge pumps.
- fitting an automatic clean agent extinguisher in the engine compartment.
- allow to replace the potter and radar.
- fitting a bubble leak detector.

The full report should be read to obtain an accurate account of the vessel's condition.



Details of " "

Type of vessel: Nautor Swan 411

Designer: Sparkman Stephens

Builder: Nautor Swan, Finland

Year: Keel laid 1978

MMSI number: 232012040

Call sign: MCBX5

Serial no/ HIN:

Builder's number - 22

Registration:

UK Small Ships: 162686

UK Part 1 Registration: Expired

RCD Category: n/a

Construction: GRP hull, deck and superstructure with bolted on lead fin ballast keel. GRP/composite skeg hung rudder. Custom twin companionway arrangement.

Rig: Masthead Bermudan sloop.

Engine: Yanmar 4JH110, 4 cylinder diesel engine fitted. Manufactured April 2015. Continuous rating -98.7bhp (73.6kW) @ 3,101rpm. Maximum rating 108.5bhp (80.9kW) @ 3,200 rpm, indirect cooled. Serial number E10328. Engine hours - 316. Turbo charger and Intercooled.

Transmission: Kanzaki, Model KM35A. Reduction ratio 2.33 : 1 and serial number 01782

Propulsion: Gori right handed bronze three folding bladed propeller

Length Overall	40'8"	12.4m
Length Water Line	33'6"	10.2m
Beam:	11'9"	3.6m
Draft:	8'	2.4m
Displacement:	23,800 lb	10,818 kg
Ballast	10,800 lb	4,909 kg
Water capacity	55 imp gals	250 ltrs
Fuel capacity	28 imp gals	129 ltrs
Holding tank	Not confirmed	Not confirmed

The above measurements were obtained from the manufacturer's manual and have not been checked by me and so no guarantee of accuracy can be given.

A. Hull skin, structure and through hull fittings

A.1. Hull below Waterline

The hull was constructed of a GRP shell moulding using orthophthalic polyester resin and gelcoat with GRP/foam lateral 'floors' and longitudinal stringers below the waterline. No core material was seen used on the topsides (seen in the anchor locker and the aft lockers). Balsa core material used on the deck. Internally, the shell moulding



below the waterline was visible in some places but access was restricted. It was seen in a limited number of places under the aft cabin bunks, aft passage, galley and centre-line sole boards in main cabin, in the vicinity of the keel, forward passage way and under the fore peak cabin grating.

- a) **Coatings** - The hull had a soft anti-fouling coating below the waterline with a moderate build up.
- b) **Damage** – No significant damage was seen to the hull below waterline. However, no anti-fouling paint was removed and this could be masking some damage.
- c) **Moisture readings** - Moisture readings were taken in a number of locations on the hull below the waterline (including the rudder) in Scale 2 of the Trammex Skipper moisture meter. This scale is the correct scale for GRP. Readings were also taken on the topsides to provide a comparison. This scale is **relative** and does **not** express moisture content as a percentage of dry weight. At each location, the anti-fouling was not scraped. The surveyor usually uses a different moisture meter but this failed to operate when switched on. An effort was made to ensure batteries were charged and connected and the meter did not respond despite these being positive. The meter used (as a back-up) is a less sophisticated meter than the surveyor normally uses.

Note that GRP on parts of the vessel above the waterline will also show a moisture reading and that readings are affected by conditions. Compare readings below the waterline to the topsides (normally considered dry) in A.2. (c) where the driest readings were 10 (or below). The scale is from 10-20. The scale does not go lower than 10 and so these readings can be considered 'dry' for this vessel and these conditions.

Below the waterline, readings were in between 12 and 15 on the scale. These are considered high but lower than expected given the visual condition of the hull (see below).

Readings were taken in several places in a line from the waterline down to the keel. As the meter was moved down to the second upper-most longitudinal stringer, the readings increase considerably. They then remained high down to the keel.

- d) **Blistering** - Small (approx 2cm) and large blisters (approx 5-7cm) were seen right across the hull. The majority had already burst. Large blisters were noted along the line of the upper stringer. It was not possible to extract sufficient liquid from the blisters tested to check the pH. This is considered to be due to them already having burst, but the gel coat had remained in tact. This indicates an advanced stage of 'Osmosis' and it is considered that a process called hydrolysis has been underway for some time.
- e) **Wicking and gel-coat aeration** – No evidence of wicking or aeration was found on the hull below the waterline. However the anti-fouling paint was not removed in any location.
- f) **Void and delamination** - Hammer sounding revealed delamination along the majority of the lengths of all the stringers except the upper one. This was not considered to be normal for different reasons. Firstly, the moisture readings rose as the meter was placed over the second uppermost stringer where delamination was closest to the waterline. Secondly if the indicators were normal then it would be expected that they would be noted evenly along all stringers. This was not the case. The indicators varied from nil to severe. The indicators were more marked in the aft two quarters, especially on the starboard side and hardly detectable in the bow on both sides. Along most of the stringers, the indicators varied and, at places, were not detectable. This is considered a structural matter as the stringers are an important part of the vessel's structure.
- g) **Stress cracking** – No stress cracking was found externally on the hull below the waterline while the paint coating was drying. Cracks retaining moisture can be seen to remain wet as the surrounding paint dries.

Overwintering ashore will help to reduce the risk of moisture related defects developing.



Recommendation (Level A) - The 'osmosis' and delamination along the stringers should be repaired appropriately. The surveyor can provide a specification for the repair if required. Please note this repair is likely to be costly and further issues, including delamination could be found as the repair proceeds. For repairs, it is considered safe to move the boat in calm to moderate seas and winds not exceeding Force 4 on the Beaufort Scale to another marina on the island: either Marina Lanzarote in Arrefice or Puerto Calero Marina.

A.2. Topsides

The hull above the waterline was of GRP, with no core material seen used for stiffening. There was a triple boot top and a single cavita line, considered gel coat not paint.

- a) **Gel coat condition** - The white gel-coat appearance was generally fair to poor, with many scratches, some deep and some gel coat repairs, notably on the port side forward of midships, under the port and starboard main cabin bunks in very localised places. Buffing and polishing is likely to significantly improve the finish.
- b) **Delamination and voids** – The topsides were not hammer sounded.
- c) **Moisture readings** – Moisture levels externally on the topsides were at the lowest end of the meter's range.
- d) **Rubbing strake** – No rubbing strake fitted.

A.3. Bulkheads and Structural Stiffening including internal mouldings

A number of components contributed to the overall structure:

- The monocoque shell moulding below the waterline.
- Longitudinal stiffening in the form of four longitudinal stringers on each side of the centreline below the waterline and two (or possibly three above the waterline) of foam laminated over with GRP. Delamination was noted on these in some localised places, notably on the port side in the lockers opposite the heads compartment. This is a similar location to the repaired hull damage notes externally. (See A.2.a) above) Otherwise delamination was noted on the stringers. Not all of each stringer was reached or tested.
- Lateral floors of moulded GRP providing stiffening by way of the keel. Aft of the keel, the floor was delaminated, possibly due to damage from a grounding. The hull at this point is strong (with vertical stiffness) with a skeg running from rudder forward to the aft of the keel.
- Main and partial plywood bulkheads running laterally including forward of the lazarette, forward of the aft cabin, forward of the main cabin, aft and forward of the forepeak. These were bonded to the hull. All bonding accessed and tested was fair.
- A ring frame forward of the galley and navigation station. No issues noted.
- The keel-stepped mast compression loads were taken directly on a GRP floor above the keel via an adjustable welded steel tray, seen corroded but serviceable where seen. Not seen below the foot of the mast. With the mast unstepped, this fabrication should be cleaned and re-coating or galvanised and the mast re-stepped with rubber (or other) insulation between the steel and the aluminium.
- A single tie rod was fitted aft of the mast to prevent the deck from lifting. This was secure on the mast step fabrication. Not seen attached to the deck above the headlining.
- Engine bearers transferring engine thrust to the hull. Sound where reached with a hammer.
- Please note that not all of the structure could be seen below inner mouldings, panels, furniture, tanks and machinery.

A.4. Skin Fittings and through-hull apertures

Note: No through-hull fittings were dismantled as part of this survey. These usually corrode from the inside.



Blakes Sea cocks - The majority of the through-hull fittings were bronze Blakes seacocks considered original. In all cases no fastenings or backing plates were seen for these. In the aft locker, two (cockpit manual bilge pump to starboard and engine air intake drains to port) were seized open. These could only just be reached by hammer. Clips were in need of replacement and double clips should be fitted. It is suggested that the hoses are replaced at the same time as they are likely to be old and possibly brittle.

Below the port aft cabin bunk, the galley sink drain was a bronze Blakes seacock. This was stiff.

The internal manual bilge pump outlet was outboard of the locker aft of the chart table seat. A Blakes seacock laminated to the hull just above the waterline. Double clips secure.

Below the sole board to port and aft of the table in the main cabin were the water maker intake and the engine intake. The engine intake was free to open and close fully and double clips were secure. The water maker intake was seized closed. Double clips were fitted at the seacock but only single clips were fitted to the joints of a hose reducer-connector.

Below the sole board in the forward passage was the WC and heads sea water intake. A Blakes seacock was stiff. Double clips secure. Hose in fair condition. A 'T' connection was noted with corrosion, considered brass, and a brass ball valve was connected to that. Both were in need of replacement.

Outboard and below the sink was the WC and holding tank to sea outlet. This was stiff, double clips secure but corroded. Replace clips.

All Blakes seacocks were in need of a service, including cleaning by way of the attachment to the hull and carefully inspection.

Other through-hut fittings

A redundant through hull fitting (considered formerly the heater exhaust outlet) was seen high on the starboard side of the transom, plugged with a wooden bung. This should be closed off securely or removed and the hole, closed off.

The engine exhaust was a stainless steel tube laminated to the transom with a stainless steel flap. Only one clip was seen. A raw water connection was also fitted to the through-hull fitting. Only one clip was seen on this. Replace exhaust and raw water outlet clips and fit double clips.

For the cockpit drain outlets, two gate valves, considered bronze, were fitted to the hull just above the waterline, in the aft compartment. Both were seized open and were in need of replacement. Gate valves can jam open due to debris. Cockpit drain valves commonly seize due to the need to leave them open and, therefore, lack of use. These should be replaced with bronze, Marelon/True Design, or DZR brass ball valves (ideally fitted with a grease nipple). Double clips were secure.

The gas drum drain hose was attached with a single clip to a laminated through hull tube. The hose should be replaced and double clips fitted.

There were three redundant through hull fittings seen in the cabins: one under each main cabin bunk and one under the forepeak sole. These were showing signs of corrosion and possibly leaking slightly. They should be removed and glassed over or replaced with a non-brass ball valve and sealed off.

The heads shower and sink drained into a GRP sump below the shower tray. The outlet was a stainless steel elbow laminated to the hull just above the waterline in the locker outboard of the heads compartment. Single clip secure. Double clips required. No valve.



Wooden bungs were not seen by all through-hull fittings. These should be positioned next to the through hull fitting and secured with a lanyard.

Recommendation (Level A) - Service all Blakes seacocks.

Recommendation (Level A) - Replace clips on manual bilge pump outlet and WC/holding tank outlet, and clips and hoses on engine air intake drains in lazarette.

Recommendation (Level A) - Fit double clips to all hose attachments below or close to the waterline, notably the water maker intake and shower/heads sink outlet.

Recommendation (Level A) - Replace the brass T connector and ball valve at the WC intake.

Recommendation (Level A) - Replace the cockpit drain gate valves with bronze ball valves fitted with grease nipples.

Recommendation (Level A) - Replace the gas drum drain hose and fit new double clips at each end.

Recommendation (Level A) - Remove the redundant through hull fittings below the main cabin bunks and the forepeak sole board.

Suggestion - Consider applying a bead of adhesive sealant to the flange nut on the transducers internally.

B. Ballast keels, keel fixings and keel matrix

The vessel had a cast lead ballast keel bolted to the hull. There was very slight movement between the keel and the hull, along the forward half of the joint. This means there is the possibility that sea water has entered the joint. From the Nautor Swan 411 specification, it appears that the keel studs may be moulded into the casting and may not be removable without cutting into one side of the keel. It is considered that the keel has not been removed for many years and, possibly, ever. For this reason, at this stage, it is recommended that the keel is removed, the studs inspected for crevice corrosion and either the keel is refitted, securely with new sealant (to protect them from future corrosion due to sea water in the joint), or, if there is evidence of corrosion, the studs are removed and replaced. If, instead, the nuts are tightened and the keel left fitted, this may mean that sea water remains in the vicinity of the studs and therefore corrosion that is currently tolerable, becomes significantly worse, resulting in the certain need for stud replacement.

Damage was seen to the forefoot of the keel where fairing had been removed by impact. The lead itself appeared to be only minimally damaged, indicating a light impact. The bottom of the trailing edge of the keel had broken off and there was a crack in the lead above, close to the joint with the hull. The trailing edge of the keel was bent to port. It is considered that this damage was caused by an impact while going astern. At the aft of the keel, there was considerable damage to the fairing and water was seen seeping out of various cracks some hours after being lifted. The exposed lead on the trailing edge of the keel was showing evidence of galvanic corrosion from the stainless steel propeller shaft. It will also add to the risk of galvanic corrosion on the bronze propeller which is more anodic than lead. The fairing should be cut back to where it is dry between filler and lead and made good.

The impact of the bend along the trailing edge was not affecting the boat's movement through the water (under sail or power) in any detectable way. However, straightening the trailing edge, prior to fairing the keel with filler, may be desired cosmetically. The broken section is considered of minimal significance other than visual. However, it is considered necessary to repair the crack to prevent it becoming worse resulting in the need for a new keel. While repairs to lead keels are not always reliable, in this case it is considered satisfactory to repair the crack and monitor it.



Recommendation (Level A) - Remove the keel, inspect the studs for crevice corrosion, replacing if necessary. Repair the crack at the trailing edge. Refit making good the seal at the join and the fairing.

Suggestion - Consider straightening the trailing edge of the keel.

C. Rudder and steering

a) Rudder blade - The rudder blade was made in two halves of moulded GRP bonded over the stainless steel rudder stock and welded tangs. It was considered to be foam filled. No cracks were seen along the leading, trailing and lower edge of the blade. The upper edge and where the stock enters the hull, were not seen.

Hammer sounding found delamination on both sides adjacent to the position of the stock and in other locations as well. The blade was stress-tested (body weight only) and found secure. Moisture readings were taken and found to be similar to those on the hull below the waterline. The rudder blade required repair.

Evidence of osmotic blisters and burst blisters were seen on the blade.

b) Rudder skeg - The rudder was skeg-hung. Skeg secure.

c) Rudder stock, rudder tube and rudder bushes - The rudder was secured with three bushes, one on the skeg, a second in the short rudder tube laminated to the hull and the third in a horizontal knee lamination above the rudder quadrant. Tolerance was considered acceptable. The stainless steel rudder stock extended through the blade, passing through the rudder tube and seal. Signs of water ingress were seen and it appeared that repairs had been carried out to the joint with the hull. This requires further investigation and possible repair or reinforcement.

d) Wheel steering – The vessel was fitted with a cable steering system. An aluminium quadrant was fastened to the stock. A key and keyway were not seen due to limited access. Cables were attached to each side of the quadrant. Where seen cables were in fair condition and secure. With the rudder removed, the cable should be checked. The chain and attachments in the pedestal were not seen. The autopilot rotary drive motor, forward of the quadrant was secure to an aluminium fabrication bolt fastened to the cockpit sole. The pedestal was not accessed internally. The pedestal was secure and in fair condition.

e) Rudder Stops - Rudder stops were seen fitted to the horizontal knee above the quadrant.

f) Raymarine P70 Autopilot – This was seen functioning, holding a course and tacking, but not fully tested. The fluxgate compass was seen in the aft cabin port side locker. It was reading a little high similarly to the helm compass. EV1 computer seen in lazarette close to aft cabin.

g) Emergency tiller – An emergency tiller was seen in the aft locker, tied with cord to one of the gate valve handles. It was not tested on the rudder stock. The tiller should be stowed where it can be deployed quickly and where it cannot interfere with the steering gear. It is likely to be hard work at sea given the short tiller length required to clear the pedestal.

h) Bow thruster – No bow thruster was fitted.

i) Wind vane steering – A monitor self steering system was fitted to the transom. Secure. Only the light-wind vane was seen aboard. Two are available. The joints were worn but considered serviceable. Not tested.

Recommendation (Level A) - Remove the rudder, cut open, removing the leading edge, inspect the stock and tangs and repair as necessary, ensuring the stock is laminated to the leading edge and the tangs to one side of the blade and sealing where the stock enters the blade.

Recommendation (Level A) - With the rudder quadrant removed, inspect the rudder tube joint to the hull and repair as necessary.



Recommendation (Level A) - Stow emergency tiller where it can be deployed quickly. Test at sea.

D. Deck

D.1. Hull-Deck Join

The hull and deck moulding were joined at the deck edge where the hull moulding turned inboard and the deck moulding was laid down on top. Seen in the chain locker, locker aft of navigation station and the lazarette. The join was bolted through the aluminium toe rail and over-laminated. Fastenings were seen at regular intervals. No evidence of water ingress or other issues was seen.

D.2. Deck, coachroof and cockpit

The deck, coachroof and cockpit were constructed of a single GRP moulding. The deck, coachroof and cockpit sole had cored sections and were teak laid.

- a) **Cosmetic condition, crazing, cracking and damage** - The GRP was only seen in a few places - part of the coachroof coaming and coachroof aft of the mast. The gel coat here was not showing UV damage. Filled screw holes were noted on both sides where fittings had been removed. No delamination here.
- b) **Teak** - The teak was not heavily worn. The paying was not perished but it had parted from the planking in places. Plugged screw holes were seen in a limited number of places.
- c) **Delamination** - Hammer sounding the deck revealed no delamination. However, this was done through the teak which can mask defects below.
- d) **Hand rails** - No handrails were seen on the coachroof.
- e) **Distortion and compression** - The mast was keel-stepped. No signs of compression of the deck were seen at the mast.
- f) **Cockpit** - The cockpit was deep with high coamings. The cockpit drained through two drains considered adequate size and in fair condition.
- g) **Chain locker** - The chain locker was sealed from the deck and drained into the bilge.
- h) **Aft-deck lockers** - The lazarette lid hinges were firm, latches fair, not lockable. The port side locker lid was not being supported by the telescopic support arm.

Suggestion - Consider repairing the paying where it has parted from the teak planking.

D.3. Main companionway and other accesses to accommodation

These were:

- a) **Forward Companionway** - Forward of the cockpit spray hood, with its own smaller spray hood. All fair. Companionway steps were secure internally. Lockable from outside. Minimal signs of water ingress.
- b) **Cockpit Companionway** - The bridge-deck was considered adequate. Two solid teak washboards were seen, one hinged along lower edge. The hatch lifted and could be held up securely. Companionway steps were secure internally. Minimal signs of water ingress were seen. Access could be securely locked from inside.
- b) **Cabin hatches** - The 2 coachroof/deck hatches were considered original. The large sliding fore deck hatch with teak frame and mildly crazed acrylic could be secured with three of the four latches. No signs of water ingress seen. The smaller main cabin hatch (Goiot 115) with an aluminium frame and un-crazed acrylic/plexiglass was secure and could be secured in the open position. Lockable from the inside. Could not be opened from the deck when unlocked. No signs of water ingress seen. One of the hinge pins was half-way out of its socket and should be refitted and secured.

Recommendation (Level A) - Repair or replace the fourth latch on the forward sliding hatch.

Recommendation (Level A) - Refit and secure main cabin hatch hinge pin.



D.4. Ports and windows

- a) **Main Cabin Ports** - Two large fixed port lights were seen on either side of the main cabin coachroof coaming. They were firm to the coachroof. Acrylic was yellow from the sun and not possible to view through. Frames in fair condition and secure. Minimal signs of water ingress were seen internally.
- b) **Opening lights** - An opening portlight was seen on each side of the main cabin at the galley and navigation station. Secure and no signs of water ingress seen.

D.5. Pulpit, stanchions, pushpit guardrails and jackstays

These consisted of:

- **Pulpit** – stainless steel tube, three legs fastened to the toe rail and stem head fitting. All were secure.
- **Pushpit** – in one part with four legs, fastened to the toe rail. All secure.
- **Stanchions and guard rails and guard wires** - Stainless steel stanchions bolt fastened to sockets fastened the toe rail. Secure and in fair condition. The guard wire was plastic coated using StaLok terminals with split pins securing the clevis pins at the pulpit. At the pushpit, the guard rails were attached with unmouseed shackles. These should be mouseed.
- **Jackstays** – Not fitted but attachments seen on deck. Fit jack stays before going to sea.
- **Cockpit safety line rings** - Two were seen, secure.
- **Granny bars** - Non fitted.

Recommendation (level A) - Mouse shackles attaching guard rails to the pushpit.

Recommendation (level A) - Fit jack stays before going to sea.

E. RIG

E.1. Rigging attachment points

- a) **Forestay** – The forestay was attached to a stem-head fitting with a chain plate through-bolted to the stem and a breast hook through-bolted to the deck at the stem. Backing plate seen (by camera only) for the chain plate at the stem. Underside of the deck below the great hook was not seen even by camera. Some of the fastenings were showing signs of corrosion and should be replaced. This will probably require removal of the windlass to provide sufficient access in the chain locker. There was two-way articulation and alignment was fair. A split pin on lower clevis pin was beginning to be guillotined by the toggle. A tight fitting washer over the clevis pin should be fitted between the pin and the toggle.
- b) **Staysail stay** - Set well back from the forestay, a removable staysail stay was fitted. Below deck level, a chain plate bolted to the deck/track could be fastened to the bulkhead below the forepeak bunk but this was not attached at the time of the survey. Fastenings fair. Clevis pins were secured with C rings which have a tendency to come out. Replace these with split pins. There was two way articulation. Alignment was fair.
- c) **Lower, cap shrouds and checkstays** - All but the check stays were attached to a single through deck chain plate fitting on each side deck. Below deck on the port side, a panel was removed but this did not expose the entire chain plate attachment. A laminated plywood hanging knee was seen and the chain plate appeared to be 'L' shaped and bolted through this hanging knee. There were some signs of water ingress and mild signs of crevice corrosion. The starboard side was not accessed as this also required removing a speaker for the stereo system. It is recommended that the chain plates on both sides are access fully for inspection and fastenings replaced as necessary. There was two way articulation. Alignment was fair.
- d) **Check stays** - A chain plate was seen welded to the toe rail on each side. All fair.
- e) **Backstay** – The backstay was attached to a chainplate through bolted to a handing knee laminated to the transom with backing plates seen. There was two way articulation. Alignment was fair.

Alignment and articulation are necessary to reduce lateral forces on the wires or terminals and flexing as the wire



continually tightens and slackens.

Recommendation (Level A) - Replace corroded fastenings on the forestay stem head fitting and chain plate and at the staysail stay chain plate.

Recommendation (Level A) - Fit a correctly sized washer over the clevis pin at the base of the forestay and staysail stay to prevent the split pin from being cut.

Recommendation (Level A) - Replace C rings in clevis pins at staysail stay toggle with split pins.

Recommendation (Level A) - Inspect the shroud chain plates on both sides and replace as necessary.

E.2. Spars

These included double spreader mast, boom and spinnaker pole. The mast was keel-stepped.

a) Mast and boom – As far as could be seen from the deck with the mast stepped, the silver anodised aluminium mast and boom were in fair condition while corrosion was noted to the mast immediately above the deck, where a fitting (possibly a winch) was removed and under the kicker attachment. Corrosion was also seen at the keel step below deck. At the step, the pitting was less than 2mm deep. Above deck the pitting is not considered to be in need of repair now. However, it is suggested that with the mast unstepped, a full inspection of the mast is carried out and with the kicker (and any other) fittings removed, a sheet of marine grade aluminium alloy is fitted over the corroded area(s). The very lowest 30mm or so of the mast was set inside the steel step and could not be seen. Corrosion was also seen at some fittings further up the mast (eg spreader and shroud attachments). With the mast down, the mast and especially the foot should be further inspected and repaired as appropriate. It should be possible to repair by sheathing with aluminium sheet.

Spreaders were of extruded aluminium secured to the cast aluminium roots by clevis pins and split pins.

The gooseneck attachment between mast and boom was serviceable. The mast boot at deck level was in fair condition.

b) Spinnaker pole - A carbon fibre spinnaker pole was not removed from its position on the deck. The pistons at the forward end was stiff or seized. It was losing its UV protection at the ends and it is recommended that this is restored.

Recommendation (Level A) - With the mast unstepped, inspect fully at all fittings and at the foot of the mast and repair if necessary.

Recommendation (Level B) - Restore the UV protection at the ends of the spinnaker boom.

Suggestion - Consider repairing the corroded parts of the mast using aluminium sheathing.

E.3. Standing Rigging

a) Wire and terminals – Rigging was tight. All wires were 1 x 19 stainless steel wire. The lower and cap shrouds and backstay were 12mm. Check stays not measured. The inner fore stay was 5mm.

The forestay was not visible at bottom or the top of the foil and it was not possible to inspect it inside the furling system or the terminals or fittings where the rigging attached to the mast. From photograph it could be seen that there was no halyard diverter on the mast. This can leave the forestay liable to damage in the event of a 'wrap'.

The shrouds check stays and backstay all used Stalok terminals. All was considered serviceable, but not inspected above head height and cap shrouds had aluminium tubes over them - the port side was not removed. While these protect the sails from the wires, the covering also harbours dirt and can cause premature wear of the wires. If the rigging is more than ten years old then it should be replaced.



The broker reported that the rigging was last replaced by the previous owner and the boat was purchased in 2015. That makes the rigging approximately ten years old.

Recommendation (Level A) – Replace all the standing rigging unless an invoice is seen showing it is less than ten years old.

Suggestion - Consider fitting a halyard diverter to the mast.

E.4. Running Rigging and Reefing

- a) **Roller reefing** – There was a Profurl furling system fitted to the forestay and working jib. This operated when satisfactory on the sea trial. The halyard and drum swivel bearings on the jib furler were not checked as the sail was fitted. It is possible to replace these bearings. The replacement swivels and drums are costly. The drum bearing on some of the Profurl units are mild steel and corrode. A clear photograph up inside the unit could not be obtained but judging from the colour of the bearing it is likely to be corroded. The bearing can be replaced without replacing the entire drum.
- b) **Main reefing** – The main was fitted. Single line reefing was fitted and two reefs were attached. It is possible that the car inside the boom is jamming and preventing the forward second reefing line from running freely.
- c) **Halyards and sheets** – Halyards were in fair condition where seen but not fully inspected. The Genoa halyard was wire. Main sheet in fair condition.
- d) **Lazyjacks** – Lazyjacks were fitted.
- e) **Other running rigging** – The running rigging that was on deck was in fair condition. Not fully inspected. The stay-sail sheet and control lines for main sheet traveller were frayed.

Recommendation (Level B) – Service main sail in-boom reefing car.

Recommendation (Level B) – Allow to replace some of the running rigging

Suggestion – Mouse all shackles.

E.5. Sails and covers

- a) **Sails** – Main seen in fair condition with a reasonable shape but needing a valet. Heavy duty Dacron fabric. Due to the reefing lines jamming, the shape could not be fully seen. The working jib was kevlar and carbon laminated sail and was a good shape but starting to delaminate. It needed a new UV strip. Other sails not inspected - in bags under other gear under the forepeak bunk.
- b) **Sail cover** - fair condition. Note that there was no stack-pack which is a more appropriate cover to use with lazy jacks.
- c) **Spray hoods** - Fair condition, though stitching may be UV damaged.
- d) **Hatch cover** - In fair to good condition.

Recommendation (Level B) – Replace the UV strip on the working jib. Allow to replace the working jib.

E.6. Winches, clutches and other deck gear

- a) **Winches at the Mast** – One Lewmar 40, two speed winch self tailing, stiff.
- b) **Coachroof winches** - On both sides: Lewmar 44 three speed and Lewmar 40 two speed winches. On port side only, a second Lewmar 40 two speed winch was fitted (total of three winches on port side).
- c) **Winches by way of companionway** - On each side, a Lewmar 55 self tailing two speed winch and, on starboard slide only, one Lewmar 40 two speed.



- d) **Cockpit coaming** - On each side was one Lewmar 48, three speed sheet winch one Lewmar 40, two speed, manual winch with retro-fitted self tailing

All winches were stiff but serviceable and a service is recommended for all.

- e) **Clutches** - Clutches on mast very stiff and considered in need of service, but seen holding tight lines. At the cockpit and on the coach roof, lines were held by cleats. Secure.
- f) **Fore sail sheet cars and tracks, turning blocks** – all were considered secure and in working order. Fastenings not seen internally.
- g) **Main sheeting attachment and traveller** – Main sheet attachment was by traveller on the coach roof immediately forward of the cockpit spray hood. All sound and secure. Not seen below as covered by headlinings.

Recommendation (Level B) – Service all winches and clutches on mast.

F. Engine, fuel system, stern gear and cathodic protection

F.1. Engine and installation

A Yanmar 4JH110 - Manufactured April 2015. 4 cylinder diesel engine fitted. Continuous rating -98.7bhp (73.6kW) @ 3,101rpm. Maximum rating 108.5bhp (80.9kW) @ 3,200 rpm, indirect cooled. Serial number E10328. Engine hours - 316. The engine was indirect cooled, turbo charged and intercooled. The reduction box was a Kanzaki, Model KM35A. Reduction ratio 2.33 : 1 and serial number 01782

The overall external visual condition of the engine was good minimal corrosion. The engine was Manufactured in 2015 and had done a low number of hours (equivalent to an average of just over 30 hours per year, when an average of 50 hours/year for a sailing yacht is considered an average use) for a non-commercial sailing yacht. The engine was tested under load during the sea trial. At the end of the sea trial, on the way back into the harbour, the helm used over 2,000 rpm and the engine fault alarm sounded. The control panel indicated the engine had entered Safe Mode. There are many different reasons what could have caused this. However as a significant bacterial infestation was noted in the primary filter and the fuel sample taken after this was cleaned still smelled of a bacterial infestation (though it was clear to the naked eye) it is suspected that a blockage in one or both of the other two filters, especially the secondary filter aft of the engine, which was considered magnetic, was the cause of this when a higher demand for fuel was required. When the engine was switched off and then on again at lower speeds, it operated normally. However, a diagnostic process using Yanmar diagnostic software is required to confirm the fault.

- a) **Engine bearers and mounts** - Access was limited. Flexible engine mounts were not flexing excessively with the engine running. The flexible mounts were also not corroded. Engine bearers were hammer sounded in a limited number of places with restricted access under the engine and no delamination found. No stress cracking was seen on the bearers.
- b) **Engine Oil** – No significant oil leak was seen. The sump condition was good where seen (by photograph). There was no evidence of water (emulsified oil) in the oil or in the rocker cover cap or on the dip stick. The oil was clear and the level satisfactory. No date was seen on the filter.
- c) **Cylinder Compression** - The engine started almost immediately when cold after some time stationary. The exhaust gases were clear under load.
- d) **Cooling system** – Where seen, hoses were in fair condition. A strainer was seen on the raw water intake and an anti syphon loop and vent were seen on the outlet hose to the exhaust elbow and exhaust outlet on the transom. The vent had no valve and should have produced a 'tell tail' stream of water with the engine running



but this was not seen, suggesting that the vent is blocked, perhaps with salt crystals. The hose from the heat exchanger to the anti-syphon valve was perished and in need of replacing. Single clips were used on some raw water hoses where seen. Double clips should be fitted unless tail pipes are not long enough. The raw water pump impeller was not inspected. The coolant pump was not inspected internally.

The belt condition and tension could not be checked as they were covered by a panel. The coolant pump will not operate if the belt fails. It is suggested spare belts are carried and the belt is regularly renewed.

The cylinder block was examined as far as possible with restricted access and no cracks or damaged core plugs were seen. No corrosion was noted at the aft of the heat exchanger where the raw water is emitted. Corrosion is common here due to the presence of salt water and mixed metals inside the heat exchanger.

No sign of emulsified oil was seen in the expansion tank or on the top of the heat exchanger.

- e) **Turbo** - Turbo charger and intercooler not seen or inspected. Light use of turbo chargers can cause bearing failure due to condensation persisting internally and causing corrosion.
- f) **Exhaust** – The welded stainless steel exhaust elbow was sound to the hammer. Exhaust elbows do corrode from the inside and need to be replaced periodically. Failure not only results in loss of cooling but also fills the engine compartment/cabin with exhaust gases.

A Stainless steel and rubber silencer (similar to Osculati) was fitted aft of the engine. This was considered in need of replacement as the stainless steel ends had corroded and were covered with tar as a short to medium term repair. Corrosion was seen on the stainless steel where tar had cracked off. Double clips were seen at the ends of the main body (rubber to stainless steel ends). The exhaust hose connections to the silencer were not seen due to restricted access. The exhaust hose was in fair condition where seen except forward of the outlet on the transom where it was seen to be distorted. That section should be replaced. No swan neck to deck level was seen in the lazarette. This is recommended.

- g) **Engine Controls including stop** – The stop solenoid operated. Gear and throttle controls operated freely and smoothly at the helm and were securely connected to the diesel pump and reduction box. Control panel instruments were seen working. The alarm lights and sounder were seen working and the engine fault alarm sounded during the sea trial (see fuel). The panel was in fair condition.
- h) **Electrical** – The alternator (125A is fitted as standard to these engines) was seen charging the batteries with the engine running. The alternator was in satisfactory visual condition. The starter motor operated more than once.
- i) **Sound proofing** - The sound proofing inside the engine cover had come away due to failed adhesive.
- j) **Reduction box** - Oil clear and level satisfactory. This was not considered to have been replaced at the same time as the engine.
- k) **Engine room ventilation** - Two passive vents were seen from the aft cockpit coaming. Ducting on the transom was in fair visual condition.

Recommendation (Level A) – Investigate and repair the cause of the engine entering safe mode.

Recommendation (Level A) – Replace the engine exhaust silencer aft of the engine

Recommendation (Level A) – Replace the aft section of the engine exhaust hose and introduce anti anti siphon loop.

Recommendation (Level A) – Replace the raw water hose from the heat exchanger to the anti-siphon vent.

Recommendation (Level B) – Service (unblock) the anti-syphon vent on the raw water feed to the exhaust.



Recommendation (Level B) – Fit double clips to all exhaust and raw water hose connections unless tail pipes are too short for this.

Recommendation (Level B) – Re-fit the sound proofing in the engine cover.

F.2. Fuel System

- a) **Tank material and bearers** – The fuel tank was located below the outboard starboard bunk in the main cabin. Two shut off valves were seen.
- b) **Fuel gauge** - No fuel gauge was seen.
- c) **Filler/vent unit and hose** – The fuel filler unit on the starboard side deck was not connected by lanyard to the cap. The seal in the cap was in poor condition and in need of replacement. The filler hose was in fair condition where seen below deck. Vent for the fuel tank was considered to be beside the anti siphon vent outlet on the topsides aft of the chart table seat.
- d) **Fuel Pipe and hose** – Flexible fuel hose fitted to the engine was compliant with ISO7840. Some was covered with a black foam sheathing and this was seen damaged but not removed for closer inspection of the fuel hose below.
- e) **Electric fuel pump**- None fitted.
- f) **Filters and bowls** - The primary filter (Racor) was mounted on a lateral floor beneath the sole board forward and to starboard of the engine with a water trap and sight bowl. Fuel in the sight bowl was seen black. A sample was removed by the surveyor and found to be black, highly viscous and foul smelling, all confirming an infestation of microbes causing 'diesel bug'. This was cleaned and the filter replaced (by an engineer) and a second sample taken. This was also foul smelling but clear and approximately normal viscosity for diesel fuel. A secondary filter was below the port side aft cabin bunk. This was considered magnetic. A tertiary filter was fitted on the engine. No date was seen on the fuel filters.

Recommendation (Level A) – Clean and flush the tank. Replace fuel and treat with biocide and prevention chemicals.

F.3. Stern Gear

- a) **Coupling** – A flexible coupling was fitted.
- b) **Propeller shaft** – This was 1 1/2" non-magnetic stainless steel. The shaft should be removed and checked for corrosion at the stern seal and the P bracket (after standing for some years in warmer water, there is a high chance of crevice corrosion). Allow to replace propeller shaft.
- c) **Stern Gland** – An adjustable nylon stern gland was fitted. This was seen to have been dripping and was seen dripping slowly during the sea trial. It was not dripping excessively and could be tightened. There was no means to grease the seal. The rubber boot on the stern seal was in fair condition. Clips were starting to show signs of corrosion and will need replacing in the medium term. Access was not possible for close inspection of these parts.
- d) **Stern tube** - The stern tube was only visible at the forward end for a short length. Water was seen lying aft of the stern seal rubber boot and it cannot be confirmed that the stern tube is not leaking. If it is, it is not (yet) leaking very much judging by the amount of water in the bilge, the absence of an automatic bilge pump and the time she had been afloat without anyone aboard.
- e) **P Bracket and Cutlass bearing** - The P bracket was secure. The cutlass bearing had very little tolerance.
- f) **Propeller** – This was a Gori three folding bladed right-handed manganese bronze (actually a form of brass) propeller. It was secure on the shaft. There were small signs of corrosion on the propeller, but fouling



prevented full inspection. A small anode was fitted to the propeller. The folding mechanism was slightly worn but serviceable. Two shaft anodes were fitted on the shaft and were not significantly depleted.

- g) **Rope cutter** – An Ambassador Striper rope cutter was fitted. All fair.

Recommendation (Level A) - Inspect the propeller shaft for pitting at the stern seal and the cutlass bearing.

F.4. Generator

A 12V Duogen wind and water powered generator was fitted. This was partly dismantled and was not assembled to test.

F.5. Cathodic protection

Other than the shaft and propeller anodes, no sacrificial zinc anode was fitted. No anode is fitted in this model of engine.

G. Safety and other Equipment

G.1. Ground tackle and mooring arrangements

- a) **Main anchor** – This was a 35lb (16kg) CQR anchor. Considered light for a vessel of this size. 20kg or a second anchor in tandem is recommended. Condition was serviceable. There was provision to secure the anchor to the stem head fitting and to prevent the chain lifting when deployed. The roller on the stem head fitting was in fair condition. The anchor was attached to the chain via two unhoused shackles. These should be moused.
- b) **Main anchor chain and warp** – An unmeasured length of 10mm (or 3/8”) galvanised chain was in fair condition where seen. The chain was not laid out for inspection. No anchor warp was seen in the chain locker. The chain was not seen fastened to a secure point in the chain locker. Warp or chain should be tied off to the side of the anchor locker by a lanyard that can be readily cut in the event of an emergency. Link size was considered adequate for a vessel of this size and the amount of chain seen in the locker was considered adequate for most anchorages.
- c) **Kedge Anchor** – No kedge anchor was seen.
- d) **Anchor windlass** – A Lewmar vertical axis electric anchor windlass was secure on the deck over of the chain locker. It did not operate when tested but this may be because the circuit breaker was open and this was not found aboard.
- e) **Mooring cleats and fair leads** – There were four aluminium mooring cleats one on each quarter and one on each side of the transom. All secure. At the stem head fitting, two stainless steel horns were seen welded to the fitting and used as mooring cleats.

Recommendation (Level A) - Layout the bower anchor chain for inspection.

Recommendation (Level A) - Mouse the anchor to chain shackles.

Recommendation (Level A) - Test the windlass and clutch.

Recommendation (Level A) - Confirm the windlass has a circuit breaker fitted.

G.2. Bilge pumping arrangements

- a) **Manual pump** - There were two manual bilge pumps fitted, one aft of the navigation seat and the other in the aft of the cockpit in the lazarette. These were heard to operate (sucking or blowing air). The bilge was dry so they were not properly tested. Both suction hoses terminated in the bilge at the aft of the keel and neither had a strum box fitted (to filter out debris). Where seen, the hoses were in fair condition. Single clips were seen on the cockpit pump (secure) where double clips are required. It is suggested that the pumps are serviced.
- b) **Electric pump** - There was no electric bilge pump fitted. An electric pump with an automatic function is recommended.



c) **Hoses** - Anti siphon loops for the two bilge pumps were seen.

Recommendation (Level A) - Fit double clips to all bilge pump hose attachments.

Recommendation (Level B) - Fit an electric bilge pump with an automatic as well as manual function.

Suggestion - Consider servicing the manual bilge pumps.

G.3. Davits and Boarding Ladders

No davits were fitted. A folding boarding ladder was seen. Boarding ladders should extend into the water sufficiently to facilitate an MOB recovery (600mm). An MOB sling was seen.

G.4. Navigation Lights

The navigation lights and their performance were as follows:

- White stern light fitting on the gantry. Working. Bulb wattage not checked. This light was being masked by the life raft and Duogen. It should be relocated so that is visible as required.
- Red and green light fitting on pulpit. Working. Bulb wattage not checked.
- Steaming light on mast. Working. Wattage not checked.
- Deck light on mast - Working.
- Tri-colour at masthead – Could not be confirmed due to strong sunlight. Bulb wattage not checked.
- Anchor light at masthead – Could not be confirmed due to strong sunlight. Bulb wattage not checked

Assuming the wattage of the bulbs (and therefore range) were adequate, the vessel's navigation lights would conform to the Collision Avoidance Regulations when all are working.

Recommendation (Level A) - Relocate the stern light to that is is not masked by the life raft and Duogen.

Recommendation (Level A) - Confirm the anchor light and tri-colour are working.

G.5. Firefighting equipment

a) **Fire extinguishers** - No in-date fire extinguishers were seen. For a boat this size, the RYA recommends fitting at least three fire extinguishers with a minimum combined fire rating of 21A/144B. In this case, one in the main cabin, one in the aft cabin and one in the forepeak. An extinguisher at the galley and an automatic extinguisher in the engine compartment are considered good practice.

Fire extinguishers should be serviced annually and replaced every ten years or replaced every five years if not maintained annually.

b) **Engine compartment** – The compartment could be sealed from the rest of the boat. No fire port was noted (for firefighting in the engine compartment without opening the hatches and allowing oxygen to the fire). The insulation was not checked for flammability. No automatic fire extinguisher was seen in the engine room.

c) **Smoke alarm** – No smoke alarm was seen.

d) **Fire Blanket** – No fire blanket was seen at the galley.

e) **Petrol** – Petrol should be stowed on the aft deck, where any flammable vapours cannot leak into the boat.

Recommendation (Level A) – Fit three new fire extinguishers with a combined rating of at least 21A/144B.

Recommendation (Level A) – Fit a fire blanket at the galley that complies with the BSEN 1869 standard.

Recommendation (Level A) – Fit a smoke alarm.



Suggestion – Consider fitting an automatic clean agent extinguisher in the engine compartment.

G.6. Lifesaving equipment

The following lifesaving equipment seen aboard:

- One horseshoe lifebuoy seen below with light and no batteries.
- No Dan Buoy seen.
- Viking 6UKSL 6 person liferaft in valise on transom. Serial number 11048406, with ISO pack II. Manufactured 2008. No service data seen by the surveyor or held by the manufacturer (the surveyor checked this). Service or replace the liferaft.
- No in-date flares were seen.
- No thermal protective aids (TPAs) seen aboard (eg 'space' blanket)
- An ACR Global FTX V4 EPIRB was seen. Manufacture date -August 2017. Manufacturer states that this EPIRB battery will need replacing by at least August 2027. UIN 1DOC8772CCFFBFF; p/n2831.62. Not tested.
- No life jackets were seen aboard.

Recommendation (Level A) - Fit batteries to the horse shoe buoy, fit a dan buoy with a light, replace or service life raft.

Recommendation (Level A) - Carry appropriate safety equipment including flares and lifejackets.

More information can be obtained from the RYA.

The RNLI offer advice concerning levels of safety equipment on their website.

G.7. Navigation equipment

The following were seen aboard operating unless stated:

At the helm / in the cockpit

- Steering compass on binnacle. The light was not seen working. Reading slightly higher than the fluxgate compass.. May need adjusting.
- Raymarine P70 auto-pilot - port side of cockpit at helm. Seen working, holding a course and tacking. A Raymarine EV1 CPU was seen in the lazarette. Fluxgate compass seen in locker to port of aft cabin.
- TackTick mn100-2 set to analogue direction and digital wind speed seen switched on and showing approximately the correct speed and direction.
- TackTick mn100-2 set to boat speed. Seen switched on but transducer not fitted through the hull.
- TackTick mn100-2 set to depth. Seen switched on an working, showing depth but calibration not checked.
- TackTick mn100-2 set to wind. Seen switched on and working but not displaying any data.

At chart table

- Raymarine Ray50 DSC VHF - switched on and working - 10/10 response from local station. This does not have an AIS receiver or transponder built in.
- ICOM - IC 706 MK IIG - radio with SSB capability. Seen switched on and operating but not fully tested.
- Furuno radar - not working.
- Standard Horizon CP170C GPS 7" colour chart plotter. Not connected and no plug attached to cables so not tested. This is NMEA 0183 only.

A radar reflector seen on mast - not tested.

No day shapes seen (steaming triangle and anchor ball). Fog horn not seen.



Recommendation (Level A) – Carry a fog horn and day shapes.

Suggestion - Allow to replace the potter and radar.

G.8. Other inventory items

- a) **Mooring lines and fenders-** Numerous mooring lines and fenders seen, in fair to poor condition.
- b) **State flags** - Red Ensign seen.
- c) **Outboard motor** - Outboard was stowed deep in the lazarette under other gear. It would need two people to extract it safely. Not inspected.
- d) **Dinghy** - Seen rolled up and tied in the forepeak. Not fully inspected. Tubes appeared in fair visual condition. HIN not seen.

H. Accommodation and on-board systems

H.1. Accommodation General

Overall the accommodation was in good condition. Upholstery, headlinings, woodwork, sole boards and trim all showed only moderate signs of wear.

Ventilation was good with hatches, opening lights or Dorade vents in all cabins.

H.2. Gas Installation

When built, this vessel did not have to comply with the EU's Recreational Craft Directive (RCD). The vessel is not being coded for commercial use and the surveyor is not 'Gas Safe' registered.

The vessel had the following gas installation:

- A single butane bottle (Camping Gaz) in an aluminium drum in the lazarette. A spare bottle was seen in a bucket in the lazarette. This is not safe storage of gas. Regulator directly on the bottle with shut off valve on the regulator, seen secure in the drum. There was also a solenoid shut off valve outside the drum which was heard working when switched from the galley. No gas was emitting from cooker burners when tested with solenoid on.
- The drum drained overboard via a drain hole in its base with a hose to the topsides of the hull, just above the waterline. This hose and connections was seen (by camera) below the drum with single clips at each end. The clip at the hull attachment was considered in need of replacement and the hose should also be replaced. The drum was poorly sealed at the lid. If the drain blocked, a gas build-up could fill the drum and spill gas into the boat. It is therefore important to regularly check that the drain hole is clear. The drain diameter was considered sufficient. It is also recommended that the seal at the lid is improved and a rigid connector is fitted to the side of the drum with the flexible hose terminating there and copper hose attached within the lazarette. There was pitting in the base of the drum and it was considered that at least one of these had penetrated the base completely, allowing any escaped gas into the boat. The drum base should be repaired/replaced
- The regulator was in fair visual condition.
- The flexible low pressure rubber hose from the regulator was out of date and in need of replacement. It also needed to be connected using double clips.
- No bubble leak detector was seen. This is suggested.
- The copper pipe on the low pressure side, was seen corroded in the lazarette and replacement is recommended.
- The flexible hose to the cooker was out of date and should be replaced. No shut off valve was seen at the cooker.



- The gimballed cooker was in fair visual condition with 2 hob burners, a grill and an oven. The four flame failure devices were not tested as they could not be lit.
- There was an opening port above cooker.
- No other gas appliances on board.
- No gas alarm was seen. This is recommended.
- It is recommended that a certificate of safety is obtained if possible.

Recommendation (Level A) – Replace the gas drain hose and clips.

Recommendation (Level A) – Improve the seal at the lid of the gas bottle drum.

Recommendation (Level A) – Terminate the flexible hose at the drum side with a rigid fitting on the side of the drum and copper pipe outside of the drum.

Recommendation (Level A) – Replace the flexible hose at gas locker and the cooker.

Recommendation (Level A) – Repair or replace the base of the gas bottle drum where there is pitting.

Recommendation (Level A) – Replace the copper gas pipe.

Recommendation (Level A) – Store the spare gas bottle where any escaping gas can flow freely and safely overboard.

Recommendation (Level A) – Fit a gas alarm.

Suggestion: Consider fitting a bubble leak detector.

Please note this survey is not a gas safety certificate, that is only obtainable after comprehensive assessment by a qualified person listed on the Gas safe register www.gassaferegister.co.uk or equivalent.

H.3. Electrical installation

a) **Service Batteries** – Three 108Ah (CCA 800 cranking amps) sealed 12V lead acid batteries connected as one bank, were secure in a locker under the aft companionway steps. These batteries had a voltage of 13.45V but this was with the battery charger switched on. They were sulphated which is a condition that covers the plates and prevents the battery from functioning correctly. The sulphation also prevents the test meter from fully testing the batteries. If the sulphation is not severe, it can be reversed with a boost charge of 14.8V. It is caused by either long periods without a boost charge or significant and extended discharge. With a voltage of 13.45, it would be likely that these batteries would recover if charged at 14.8V and with a charger capable of reconditioning batteries. However, the battery charger was not switched off and left off for 24 hours to see what the voltage dropped to without constant charge.

Engine battery - A single 108Ah (CCA 800 cranking amps) sealed 12V lead acid battery was secure in its box below the aft companionway steps. This tested 'Good' with 13.48 volts, 820 CCA, 86% state of health, 100% state of charge and 4.44MR internal resistance. 4.44Mr is a relatively high figure for internal resistance indicating the battery is likely to fail in the medium term.

A volt and amp meter for the batteries was seen fitted at the navigation station but not fully tested.

b) **Charging** - Charging was by a single 125A alternator on the engine (seen working), from shore power (Dolphin 12V 30A chargers) or the Duogen generator. Not seen working.

c) **Regulator** - A regulator for the Duogen was seen fitted. This was not tested.



- d) **Circuit protection** – 12V DC circuits had circuit breakers mounted on a panel at the navigation station. Those that were tested functioned adequately.
- e) **Cabin lighting** – Some cabin lights were not seen working.
- f) **230 volt AC power system**– 230V AC system was fitted. There was an RCD in the lazarette. No MCBs were fitted. The RCD tripped off when tested indicating it was working. A separate set of MCBs was required to protect crew from short circuits in 230V equipment. The shore power cable was attached inside the lazarette meaning the locker lid closed onto the cable. This should be remedied with a new or shortened cable and a socket in the cockpit.

Shore power circuitry was not inspected.

- g) **Inverter** -No inverter was seen.

Recommendation (Level A) – Fit a set of MCBs to the 230V system.

Recommendation (Level A) – Fit a socket for the shore power cable in the cockpit and shorten the cable to remove the damaged section.

Recommendation (Level B) – Allow to replace service batteries.

H.4. Fresh water tanks and delivery

The two fresh water tanks were seen under the main cabin bunks on each side of the cabin. A third tank was not seen below the forepeak bunk. A brass valve, possibly running to/from this tank was seen below the forepeak sole in highly corroded state and in need of replacement. No tank gauge was seen. The water filler unit was on the port side deck. The seal was poor and in need of replacement.

The calorifier was in poor visual condition and unplugged from the power socket. Not tested on shore power. It was heated by the engine as well as 230V system (engine heating not tested). Allow to replace the calorifier.

There was a fresh water pressure pump under the port bunk in the main cabin. Freshwater hoses and pipes, where seen, were in fair condition. A leak was detected (pump cycling on and off repeatedly) but not located.

Water was delivered to galley and the heads. The water was not tasted.

The shower had a sump and manual pump to drain overboard. Operated when tested. Anti-siphon loop was seen in the shower outlet.

A 12V Village Marine Little Wonder LWM-200 modular water maker was fitted under the starboard aft cabin bunk with the high pressure pump beside the engine battery below the aft companionway steps. The unit was not tested because the membrane was in need of replacement. A number of components were showing signs of corrosion. While this was superficial it is also an indicator of the age of the components. Parts are considered to be available.

Recommendation (Level B) – Replace seal on fresh water filler unit.

Recommendation (Level B) - Replace the valve below the forepeak sole.

Recommendation (Level B) - Replace calorifier.

Recommendation (Level B) - Replace the watermaker membrane and test.



H.5. Heads

The WC was salt water manual flush with discharge to the holding tank or to sea. Discharge overboard from the holding tank was by a manual pump - not tested. Discharge to shore was via a waste fitting on the starboard foredeck.

The holding tank was below the forepeak bunk. It was made of stainless steel which normally corrodes from sewage along the welds. This tank was severely corroded and leaking.

The WC unit was in fair visual condition. The pump operated when tested.

WC hoses were all sanitary grade. The holding tank hoses were not sanitary grade. An anti-siphon loop was seen on the holding tank/WC discharge to sea. The tank vent was on the starboard topsides not very close to the tank. The diameter was inadequate for effective ventilation of the tank to maintain aerobic conditions.

Recommendation (Level B) – Replace the holding tank with an HDPE tank and hoses and fit a larger diameter vent.

H.6. Heating, air conditioning and refrigeration

a) **Fridge** – There was a 12V fridge. Seen working. The condensate drain was considered to be to the bilge aft of the engine. The fridge compressor was under the port aft cabin bunk and air cooled.

b) **Heating and air conditioning**– A redundant Eberspacher heater was working on fan mode only. The fuel pump was disconnected (-ve cable) and in poor visual condition. A new, unbranded heater was seen in a box in the lazarette. No control unit was seen.

d) **CO alarm** - No CO alarm was seen. Fit an Co alarm if the heater is to be repaired or replaced.

I. Security

Cabin access – Secure and lockable. **Chain locker** – n/a. **Lazarette and aft deck lockers** – Not lockable.

J. This Vessel and VAT, RCD, and Part 1 Registration

The vessel surveyed here was built before the Recreation Craft Directive became mandatory.

Unless she is used commercially she will not require to be certified by one of a state authority.

The original or other sales invoice showing proof that VAT had been paid should be obtained. VAT may need to be paid if the boat is brought to the UK.

As much information as possible about the boat's history should be gathered. The above is not intended as advice but only as an introduction to these subjects.

K. Scope, Limitations and Declaration

This full condition survey was carried out in accordance with my standard Terms of Business. Its purpose is to establish the structural and material condition of the vessel and systems.

- Where equipment was tested this is detailed in the text.
- References to condition are in relation to the vessel's age (i.e. good condition does not necessarily mean new).
- Mechanical condition of the engine is not covered under the terms of the survey, only the installation and visual condition were inspected.
- The survey is not a parts and labour guarantee and it should be noted that defects may exist in the vessel that the survey could not detect due to the limitations of time, vessel presentation and the range of tests (excluding destructive testing or dismantling) acceptable to the owner.



- Some components may appear serviceable but are found defective when under load.
- Parts of the vessel that were covered, unexposed or inaccessible due to fixed panels, mouldings etc were not examined, so I cannot say these areas are free from defects other than where specified.
- No fittings or fastenings were removed for examination other than where specified.
- The survey carries with it no guarantee against faulty design or latent defects or suitability of the vessel for any particular purpose, nor any guarantee of compliance with any particular national or international rule, requirement, regulation, law, standard or code unless specifically stated in this report.

The survey is for the client with no liability to anyone else. The surveyor retains this report's international copyright and the report may not be copied or distributed in any form without the surveyor's express permission.

Declaration - This report is as true and accurate a description of the vessel as could be ascertained at the time of the survey, but no guarantee is given or implied.

Andrew Edmond (7th March 2025)