



## Marine Surveys UK

*"Pragmatic Surveys in Plain English"*

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Survey Report no: [REDACTED]

Name of Vessel: "[REDACTED]"

Type of Vessel: Larson Senza 186 Bowrider, FRP (Fibre reinforced plastic) sports boat, deep V hull, Inboard petrol engine

Type of survey: Pre-purchase

**At the request of:**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

This survey was carried out on [REDACTED] ashore at Littlehampton Marina, Ferry Road, Littlehampton, West Sussex, BN17 5DS followed by the surveyor companionship the broker and clients on the water. The above named being a prospective purchaser of the vessel.



**Limitations:**

- ✚ Where access is restricted by fixed panels, linings etc. it was not possible to examine and I cannot say those areas are free from defects.
- ✚ This report has been prepared for the use of commissioning client and no liability is extended to others who may see it.
- ✚ In some cases it is not possible to detect latent and hidden defects without destructive testing which is not possible without the Owner's consent.

**Scope of Survey:**

- ✚ This is a Pre-Purchase Survey and its purpose is to establish the structural and general condition of the vessel. Where items of equipment have been tested this will be stated in the text.
- ✚ Camera equipment was used in places to view normally inaccessible areas and the pictures analysed to identify any issues.
- ✚ A general inspection of the engine and installation was made. It should be appreciated that some components may appear serviceable but found to be defective when the engine is run for a long period of time.
- ✚ The hatches and port lights were not leak tested with a hose and cannot be guaranteed not to leak, however visual evidence will be reported.

**Recommendations:**

- ✚ These will not be made concerning cosmetic or other minor defects, although relevant advice may be made in the text.
- ✚ Recommendations will be restricted to those defects which should be rectified before vessel is used, (or within a given time span if specified), and items which may affect insurability.
- ✚ ***Recommendations will be printed in bold italics for quick reference.***
- ✚ The recommendations are contained in the body of report in order that they may be read in context, and are also listed as part of the Conclusions at the end of this report.

**Conditions of Survey:**

The vessel had been dry sailed and was seen sitting on her trailer supported by two long side plates. The boat has been ashore for the winter and the covers were removed. No special conditions affected the survey other than as described in the text.



Information is reported in the Sections below, followed by Recommendations and Conclusions.

**Hull, Deck and Structure.**

1. Details of Subject Vessel, (General Description, Dimensions, Registration etc.).
2. Hull below Waterline including keel
3. Topsides above Waterline including Rubbing Strake etc.
4. Deck Moulding./ Coach roof /Cockpit.
5. Hull and Deck Join.
6. Bulkheads and Structural Stiffening including Internal Mouldings.

**Steering, Stern Gear, and Skin Fittings etc.**

7. Rudder and Steering.
8. Stern Gear.
9. Cathodic Protection.
10. Skin Fittings and other through Hull Apertures.

**On Deck.**

11. Ports Windows etc.
12. Pulpit, Stanchions, Pushpit, Lifelines and Jackstays.
13. Ground Tackle and Mooring Arrangements.
14. Other Deck Gear and Fittings.
15. Davits and Boarding Ladders.

**Safety.**

16. Navigation Lights.
17. Bilge Pumping Arrangements.
18. Fire fighting Equipment.
19. Lifesaving and Emergency Equipment.

**Engine.**

20. Engine and Installation.
21. Fuel System.

**Accommodation and onboard Systems.**

22. Accommodation General.
23. Gas Installation.
24. Fresh Water Tanks and Delivery.
25. Heads.
26. Electrical Installation.
27. Electronic and Navigation Equipment.
28. Heating & Refrigeration



**1. Details of subject vessel:**

Manufactured by Larson Boats, USA using a robotic construction process called VEC, the Larson 186 Senza Bowrider is a deep V fast hull designed sports boat used for wake boarding and skiing.

**Manufacturers' information not verified by measurement (from manufacturers' website)**

Length Overall:	18'6" / 5.64m
Beam:	7'10" / 2.39m
Draft:	33" / 0.83m
Dry Weight	2700lbs / 1225 kgs
CE Marked	Cat C 8 persons

Which means C: Inshore.

Designed for voyages in coastal waters, large bays, estuaries, lakes and rivers where conditions up to, and including, wind force 6 (Beaufort) and wave height up to 2 meter (6'6" ft).

**Boat specific Information**

Registration	None seen
HIN Number	US LAR 76 [REDACTED] K405 – taken from hull
Year of Build	November 2004 Model year 2005
Engines	Mercury Mercruiser 4.3L 6 cylinder naturally aspirated petrol inboard.

**2. Hull below Waterline including keel:**

- Deep V (shape of hull) single chine (the flat edge) with 2 spray rails (the angled forms in the hull) of solid FRP construction..
- The vessel was sat in its cradle with carpet covered wooden pads supporting the sides. There are no signs of distortion in the hull.
- The hull has no antifouling having been dry sailed and is finished in white gelcoat.
- Light hammer sounding was carried out (not heavy enough to damage gel) of hull at regular intervals approximately 500cm spacing all over to identify any areas of delaminating. No areas of delaminating were noted



- e) The hull was checked carefully externally. I was looking for signs of moisture ingress like wicking or blisters. None were found. On the port aft lower edge there is a hairline crack noted 240mm long, 55mm forward of the aft edge. This corresponds with the edge of the inside of the transom. The vessel was checked internally in the same spot and no signs of stress were noted.
- f) The hull was checked internally in where possible which was in the engine compartment and in the centre bilge area. all other areas are not accessible due to the top moulding.
- g) The chines and spray rails were checked under 10x magnification; no signs of stress crazing were noted.
- h) The bottom of the hull, keel area has minor scratches probably caused during lift and launch procedures. There are no signs of major damage or repairs to the hull.
- i) Moisture readings were taken in 14 places using a capacitance moisture meter of Sovereign Quantum model, operating in both shallow and deep reading modes. The meter was first checked for correct calibration. The readings recorded below are from the meter operating in the shallow and also deep mode on the relative scale 0-100. (It should be noted that the earlier Sovereign Meter scale was 0 – 25 and the Sovereign Quantum Model 0 -100).

The conditions prevailing when the readings were taken were as follows:

<b>Air Temperature:</b>	<b>9.3°C</b>
<b>Surface temperature:</b>	<b>9.3°C</b>
<b>Relative Humidity:</b>	<b>61.4%</b>
<b>Time ashore</b>	<b>Winter</b>
<b>In summary the weather conditions for obtaining moisture readings were fair</b>	

Readings were as follows:

<b>Meter</b>	<b>Range below waterline.</b>	<b>Range above waterline.</b>
Sovereign Quantum, Scale 0-100 Shallow mode	<b>18 – 23 with 3 readings 38 -30</b>	<b>18 - 40</b>
Deep Mode	<b>19 - 30</b>	<b>17 - 47</b>

The interpretation of the readings in shallow mode range;

- 0 – 15: Can be considered dry for all practical purposes.
- 16 - 20: Some moisture present at low levels but of no great concern.
- 21 - 30: Considered medium, but those at the top of the range i.e. 30 are at the point where the risk of moisture related defects developing is significant.
- 31- 45 Considered high and at a level where the risk of moisture related defects being present but not yet physically detectable is significant.
- 46 – 60 Very High and will usually be accompanied by physically detectable signs. Likely to be accompanied by a significant increase when switching to deep mode.



- 61 – 100 extremely high and indicative of possible laminate damage in addition to osmotic blistering. Likely to be accompanied by a significant increase when switching to deep mode.

These readings need to be considered in conjunction with the period the vessel has been ashore and the weather conditions when obtained. As a rule of thumb you can expect the levels to drop by one range after a few weeks ashore.

Always storing the boat ashore to allow some natural drying out to occur and keeping the hull clean will contribute significantly to maintaining this condition.

**Advisory note hull below water line:-** The crack on the port aft quarter, as far as I can ascertain is in the gel coat and not deep in the laminate. This can be treated in two ways. The correct way is to Vee out the crack with a blade, clean with acetone and fill with gel coat filler and fair. Alternatively, keep the crack well covered with marine grade wax to prevent water ingress into the laminates.

The hull readings are higher than I expected. I would expect a boat used like this to read 18 shallow and deep. There are no physical signs of moisture related problems in the hull at present although there are some in the deck, reported below. Most of the readings taken were 18 – 23 with just 3 at the higher end.

### **3. Topsides (hull above the waterline up to and including the Rubbing Strake:**

- a) Topsides constructed of solid FRP as per the hull below the water line. I could not see any signs of foam or other core material but cannot rule this construction method out
- b) Topsides moulding found fair with no signs of distortion. It is finished in white gel coat. No signs of major damage or repairs noted.
- c) No stress crazing or cracking noted in way of bulkheads or other re-enforcing members
- d) A rubber rubbing strake with chrome insert runs around the hull and deck joint, there are no signs of damage and the broker advised this has been replaced from rubber to chrome.

**Advisory note hull above water line:** Again, the moisture readings were higher than I expected to find in places and I suspect that the inside of the boat is wet in places that are not easy to dry out.

### **4. Deck moulding, coach roof and cockpit**

- a) The deck, coach roof and cockpit are a single moulding of solid FRP. Again I could not see any signs of foam or other core material but cannot rule this construction method out. Access to the underside is restricted to the engine bay and centre bilge area.
- b) The gel coat is white with moulded in non slip decks in places. Under the seats in the forward section are moulded lockers which have drain holes through the bottom which drain into the hull below.
- c) The whole area was carefully tested underfoot. No sign of delaminating or other structural defect found.
- d) Under the forward cushion, there are 5mm pimples in the gel coat. On further investigation, it was found that these contain liquid and are what are called osmotic



blisters. They do not affect have structural strength in this area and are caused most likely by the sodden cushion sitting on it at all times and small voids created during the construction process.

- e) There is a large aft locker lid over the engine compartment which is well hinged aft and stays closed with its own weight.
- f) The cockpit floor has one lifting section to access the centre bilge, securely hinged.

**Deck moulding etc advisory note:-** To prevent further osmotic blisters occurring, suggest storing all removable cushions on their sides inside the boat when left and dry out when ever possible.

### **5. Hull/Deck joint:**

- a) The hull and decks mouldings are bonded and screwed together utilising the screws from the rubbing strake.
- b) Access to view internally was restricted to the engine compartment.
- c) Internally no signs or evidence of any leaks on linings from the joint.
- d) There are no signs of damage to the joint externally.

### **6. Bulkheads and structural stiffening including internal mouldings:**

This is a monocoque (single box) construction.

- a) The hull and deck mouldings are robustly built.
- b) The two mouldings are bonded together where they touch with chemical bonding paste.
- c) Where I was only able to access the inside of the hull in the engine compartment, and under the cockpit sole bilge area. In these areas I can see that the bonding is not consistent and has gaps.

**Advisory note:** They do not appear to add strength by being bonded. The hull shape being deep V like a RIB, is structurally strong I would suggest enough without the deck in place (but I am not recommending that!)

### **7. Rudder and steering:**

- a) Steering from the wheel is cable to a hydraulic unit which is power assisted from the engine drive. All accessible fittings were hammer tested and found secure. No signs of corrosion noted nor and leaks. Fluid level was correct. The arms are greased.

### **8. Stern Gear:**

- a) This is a Mercruiser Alpa one outdrive, serial number OW559559 with transom fixing OW185407
- b) The paint on the leg is in good condition and no signs of corrosion were noted.
- c) The tilt mechanism is hydraulic and worked fully up and fully down with no sign of dropping.
- d) The metal tilt hoses were well connected, no signs of corrosion or leaks.
- e) The reservoir was full. It was noted that the mounting bracket for the reservoir was sitting in a damp area and the base was corroded slightly.
- f) All gaiters were checked and clips tested and found secure. No signs of tears or leaks in gaiters.



- g) The propeller is 5 Blade Mercruiser stainless steel High Five propeller. The edges were good and it was attached with a nyloc nut and tab washer.
- h) The broker advised that the outdrive had recently been removed to fit a new gimbal bearing.
- i) No signs of corrosion noted on the leg.
- j) There was a small amount of forward / back movement (3mm) on the propeller shaft.

**Advisory notes**

Advisory Note: -No service records have been seen for the boat although the broker says it was serviced in 2010. If these are not viewed, it is strongly advised that the outdrive unit be inspected and tested by a qualified Mercruiser engineer as repairs and even routine servicing are very expensive with these units.

The tab washer on the propeller did not appear fully fitted and should be checked by Mercruiser engineer.

The mounting bracket for the reservoir of the tilt fluid should be replaced or cleaned and painted and the area it sits kept dry.

**9. Cathodic Protection:**

- a) There are 2 anodes fitted to the leg and two to the tilt piston ends. .
- b) They were checked for continuity with the leg and propeller and are connected to the metals they are protecting.

**10. Skin Fittings and other through Hull Apertures:**

- a) The boat bung is bronze threaded plug in fitting. Found secure.

**11. Ports, Windows etc.:**

- a) Wrap around screen in alloy frame. Found secure, tested under body weight. Opening section in centre. The hinge on this is worn but functioning. All galzing material intact. No major signs of corrosion.

**12. Pulpit, stanchions, Pushpit, lifelines and jackstays:**

- a) None fitted in this design of boat.

**13. Ground Tackle and Mooring Arrangements:**

- a) One anchor aboard. Danforth type, 4KG attached to 10mm chain, 3m in length approximately with 3m of 3 strand warp.
- b) 4 fenders and 2 lines.
- c) Mooring cleats are retractable / lift up stainless steel mounted two either side. All functioning.

**Advisory note ground tackle:-** Suggest a 30m mooring warp 12mm is kept aboard to use as emergency anchor extra line and also as towing line. This is based upon boat never going more than 3 miles from shore. i.e Category 6.

**14 . Other Deck Gear and Fittings:**

- a) No boat covers were seen.



- b) Wakeboarding arch is fitted, no signs corrosion at fittings and appears secure when vigorously tested.
- c) Carpets are fitted throughout deck. These are sandy and wet.
- d) The manufacturer spec suggests that stowage lockers were fitted in the engine compartment. There are signs that something has been attached either side of engine and these are no longer present.

**Advisory note deck gear and fittings:** Suggest carpets are removed and hosed down and removed and rolled if boat is not used for long periods.

#### **15. Davits and Boarding Ladders:**

- a) Vessel fitted with folding stainless steel boarding ladder with metal steps, extending below water line for easy boarding from water. No signs of wear and secure when pulled out and climbed on.

#### **16. Navigation Lights:**

Vessel fitted with

- a) All round white light and steaming light on pole which plugs into socket on aft side deck. Seen working.
- b) Bicolour bow light fitted. Lens ok. Not working

***Recommendation:- Bicolour bow light must be made to work before operating in dark.***

#### **17. Bilge Pumping Arrangements:**

- a) Electric bilge pump fitted under engine. Heard operating but did not appear to drain bilge. There is foam and other debris in bilge.

***Recommendation:- Bilge area to be cleaned of debris and pump to be cleaned and seen operating with overboard discharge clear before launch.***

**Advisory note bilge pumps:-** Suggest manual hand operated roving bilge pump is carried on the boat at all times as a back up along with a bucket.

#### **18. Fire-fighting Equipment:**

- a. 1 fire extinguisher was seen aboard. This is in the engine compartment and is a fully automatic FireBuoy system with indicator at helm. The cylinder is HFC 227ea manufactured 2004.

***Recommendation:-. Fire extinguishers should be serviced or replaced every 5 years.***

**Advisory note Fire fighting equipment:-** Being a petrol boat I suggest a second extinguisher 1 KG powder is carried mounted in the cockpit along with a bucket with lanyard (rope to allow dropping overboard to fill with sea water).



## **19. Lifesaving and Emergency Equipment:**

a) Nothing.

### **Advisory notes**

- The RNLI operate an excellent free inspection and advice service concerning levels of safety equipment (SEA Check) and can be contacted on 08003280600 or via the RNLI website, [www.rnli.org.uk](http://www.rnli.org.uk).
- The RYA also publishes a booklet, G16, "The Boat Safety Handbook" and this specifies levels of Safety Equipment for different categories of use. Booklet is obtainable from nautical bookshops or direct from the RYA, [www.rya.org.uk](http://www.rya.org.uk).

***Recommendation - this vessel be equipped with safety equipment to the level appropriate to proposed use.***

## **20. Engine and Installation:**

Mercury Mercruiser 6 cylinder 4.3L petrol engine.

Engine number was not marked on ID card. No engine hour meter fitted or seen.

Engines were visually inspected with mirrors and camera to access underside of areas.

- a) General appearance - Engines are clean on top and no signs of any oil leaks. There are water stains on the engine in various places and the alloy parts (sump) are peeling their protective paint.
- b) The bilges were fairly clean with no signs of oil leaks.
- c) Mounting - The engines are mounted on flexible mounts forward and aft, bolted to laminated engine bearers. No signs cracks or stress to bearers. Mounts were tested with crow bar and found secure. There is some water caused corrosion on the metal of the mounts.
- d) Cooling - Seawater cooling water comes via outdrive leg. No signs weeps or leaks on water system hoses and all correctly clipped.
- e) Controls- Throttles and gear control on one control. The lever operates smoothly.
- f) Exhaust is via leg, all clips checked, no signs corrosion on exhaust system.
- g) Oil – Oil on dipstick was not clean but not overly dirty. I felt a few samples between fingers and checked under 10 x magnification and did not see and metal particles that would indicate internal wear. Inside the filler cap was small water deposits and small amount of emulsified oil.
- h) Drive belts – correct tension and no signs excessive wear.
- i) Ventilation is via 3 hoses, one containing the 12V electric blower.
- j) Broker advises that engines will be serviced and warranted by broker before purchase.
- k) Performance – The engine started after a few turns and idled well once started. No smoke came from the exhaust area on start up or during use. The broker took the vessel to 48 mph (41 knots) at 4,400RPM. She did 30 MPH (26knots) at 3,300Rpm cruising. She came straight onto the plane when accelerated with no apparent effort with 4 people aboard. Oil pressure remained at 61PSI during the trial and water temperature 80°C.



**Advisory Notes engine:-** The engine performed well. The alloy and steel parts that are losing paint should be repainted to protect them from the hostile salt marine environment. Water in the oil filler cap can be caused by condensation build up in the engine from non use but can also be from internal water leaks. The steady temperature would appear to indicate the former.

### **21. Fuel system:**

- a) Plastic tank fitted in the engine compartment, forward of the engine.
- b) All hoses securely fitted and marked ISO 7840 – Marine fuel grade quality.
- c) No fuel shut off valve was noted.
- d) Deck filler securely fitted. The grounding wire had been removed but the terminal is still fitted.
- e) Clips are all tight. There is no smell or sign of any leaks.

**Recommendation:-** *The fuel filler grounding wire requirement should be checked with the manufacturer and fitted as specified. I believe there should be a circuit from the filler to the fuel tank sender to the engine block (which may be via the sender negative lead).*

### **22. Accommodation General:**

- a) As noted above, carpets and cushions have been left aboard over winter and should be dried out to prevent deterioration.
- b) Seats are well mounted with sliding brackets and lock brackets, all secure. Some minor corrosion on alloy.
- c) It appears that the forward underberth lockers drain directly between the deck and hull moulding with no obvious path to drain to the bilge. The high moisture readings on the bow could relate to this possibly if they are foam filled.
- d) The bilge had slime in it.
- e) The engine bay is damp. Some of this comes through the mooring cleats, the underside of which go directly into the compartment. Rubber caps would stop this.

**Advisory note:-** The bow area lockers should be flushed through with fresh water to see where they drain to, the bilge flushed out and dried. I see no reason why the lockers should not have bungs fitted in the bottom as long as they are periodically checked not to be full of water and the problems excess weight would cause in handling.

### **23. Gas Installation:**

There is no gas systems fitted.

### **24. Fresh Water Tanks and Delivery.**

- a) No fresh water

### **25. Heads:**

- a) No toilet

### **26. Electrical Installation:**



12v circuits

- a) Single battery servicing engine start and domestic services.
- b) Engine has a 12V 70 amp marine alternator which charge the 75ah battery. Voltage on test remained between 14 -15Volts on gauge indicating correct charging.
- c) Battery is mounted in shallow drip tray in engine compartment. It has strap to secure in place. Terminals are tight. The terminals are not protected with rubber covers to prevent accidental short circuiting by any stowed equipment. Ventilation is direct to engine compartment.
- d) The bilge pump is connected directly to the battery protected by a 5amp inline fuse.
- e) There is a battery isolator in the positive circuit only mounted under the aft seating area.
- f) All wiring appears original manufacturers; There is one circuit breaker on the instrument panel, presumably protecting all electrics but not tested.

240v Circuits

- g) None fitted

**31. Electronic and Navigation Equipment:**

- a) Garmin Fish finder 80 seen working , mounted off transom.
- b) Log through outdrive seen operating.

**32. Heating and refrigeration**

- a) None fitted.



## **RECOMMENDATIONS and CONCLUSIONS:**

### **Maintenance Overview:**

Cosmetic maintenance: No signs of any requirement, although broker advised new chrome items fitted. The exterior is generally clean and unstained. The interior needs a deep clean through out bilge.

Technical Maintenance: No invoices seen. The engine has not been touched up paint wise during servicing but runs well. The outside is generally good.

### **List of Recommendations:**

The Recommendations made in the Report are listed below with their respective section numbers. *All Recommendations should be carried out before use of vessel or as stated.*

#### **16. Navigation Lights:**

Bicolour bow light must be made to work before operating in dark.

#### **17. Bilge Pumping Arrangements:**

Bilge area to be cleaned of debris and pump to be cleaned and seen operating with overboard discharge clear before launch.

#### **18. Fire-fighting Equipment:**

Fire extinguishers should be serviced or replaced every 5 years.

#### **19. Lifesaving and Emergency Equipment:**

This vessel be equipped with safety equipment to the level appropriate to proposed use.

#### **21. Fuel system:**

The fuel filler grounding wire requirement should be checked with the manufacturer and fitted as specified. I believe there should be a circuit from the filler to the fuel tank sender to the engine block (which may be via the sender negative lead).

### **Conclusions:**

A typical example of this type of vessel, good for coastal and inshore sports use. It doesn't appear to have had a lot of love and care and needs to be spruced up mechanically a bit and looked after, i.e dry out engine compartment otherwise it will start to deteriorate rapidly. The high water readings particularly in the bow area are not coupled with any visible problems.