

# Thoughts About Developing Our Cavalier 39 "Avanti"

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I write here about the improvements I made to Avanti which have stood the test of time since we purchased her 36 years ago in 1982. Most of the changes I made were during the year 1987-8 (when I was 59 years old and Margaret was 57), in preparation for sailing on a two year cruise to the Pacific islands, Australia and back across the Tasman Sea during the period 1988-89-90.

## **The Cruising Life:**

Over the years we have done many more trips before and after that two year voyage. We have always sailed our yacht in both summer and winter. And we have sailed a cruising yacht in the noon, the afternoon and sunset of our lives. If the right boat is properly set up there need be no end to your sailing life. When you purchase a cruising yacht you have a lifetime of joy to look forward to.

## **Our voyages from Port Chalmers include:**

Circumnavigation of the North Island - 3 months.

Circumnavigation of the South Island - 2 months.

A 2 year voyage 1988-89-90 to Fiji, Vanuatu, New Caledonia, Australia and back home across the Tasman Sea to Careys Bay.

Another voyage to Auckland, Tonga, Fiji and return - 9 months.

5 times to Stewart Island.

Two times to cruise the many sounds Fiordland.

28 times to Marlborough Sounds, each trip lasting about 10 weeks. Last trip was in 2018 and we just might sail again to Akaroa in January 2019

60 times entered Akaroa Harbour on the way to or from somewhere or other.

And many picnic and overnight outings on the Otago Harbour and the Otago coast.

## **Club Membership:**

I have been a country member of Mana Cruising Club, based near Wellington, for about 45 years. Margaret and I have made 28 return voyages from Port Chalmers to the Marlborough Sounds over that time, specifically to cruise that area, and many other voyages. But I have only been three times to the MCC club house in the North Island. I am a member solely to use the moorings in the Marlborough Sounds which are a wonderful asset.

## **Anchoring is Difficult:**

Anchoring in the Marlborough Sounds is often difficult because the water is fairly deep, often 15 to 20 meters, and the holding not particularly good. If you intend cruising the Sounds, when the time comes, may I suggest you join one of the three yacht clubs in the area. Mana Cruising Club, Waikawa Yacht Club and Pelorus Yacht Club who jointly own 60 moorings in Queen Charlotte and Pelorus Sounds. You can use all the moorings without any booking once you become a paid up member, fly the club and annual subscription pendant.

**Wheelhouse:**

A wheelhouse (hard dodger) is a wonderful asset for a yacht when cruising giving protection from the sun and the wind during the day, and the rain and the storm when on watch during the night.

It also protects the navigation instruments such as navigation computer, radar, wind instrument, depth sounder, self steering, engine switchboard and the associated wiring from the salt water that sometime comes aboard.

**Diesel Generator:**

I have a 3.6kw, 240v, 8.5hp diesel generator. It would be better if it were about 4.5kw so that two electric units could be run at the same time i.e. say electric jug + toaster or electric heater + jug, etc.

**Hot Water Cylinder:**

Doesn't need to be very big. Too big a tank will heat the boat unnecessarily in the tropics. Ours is 30 litres.

Heated by the fresh water cooling water from the engine or a 240v electrical element. It would be desirable to have the 240v wired up with a switch so that if the electric jug is turned on the hot water cylinder 240v coil is automatically switched off until the jug has boiled, then switches back on again. Then you won't be blowing your own or the marina fuses.

**Batteries:**

We have 300Amp hrs from four domestic lead acid deep cycle batteries plus one dedicated starter battery; all switchable.

Running a fridge and a deepfreeze unit, which are the main draw, plus all the other electrical load, I sometimes think we might be better with another domestic battery. However there is not an appropriate space for it and really we manage OK. With the photovoltaic panels I get seven years of life from the batteries, then renew them all.

**Battery Chargers:**

You need a big battery charger.

I have a 35W and 50W battery chargers (bought at different times) which are insufficient. (total 85W but they seldom produce more than half that). It would be better to have one modern 120W or even bigger, especially when charging batteries with the diesel generator. It is not effective to run a diesel generator all day to charge batteries using too small battery charger.

**Instal two alternators** and carry a spare all with automatic voltage control (amperage control actually). Never install automotive type battery charging control system. However quality marine diesel engines such as Yamaha already have excellent built in charging control systems. But a marinised diesel engine needs an automatic amperage controller to replace the normal automotive style alternator charge controller.

**Battery Monitor:** I have a "Link 10" unit which tells me what I need to know about battery charge level, charging or discharging rate, amperage and voltage.

**Photovoltaic Panels** are great. I have four panels totaling 13amps and have ammeters to show the charge rate. For cruising, with the fridge and the deep freeze, I think I should have another panel making about 18amps. Refrigeration is the big draw down on the batteries.

I run the deepfreeze at only -12°C to conserve 12v battery power but it does mean we cannot keep ice cream aboard which requires -17°C. So be it and probably good for our waistline.

### **Wiring for 240v:**

You will spend more time in marinas when cruising than you expect and will therefore often have access to 240v shore power.

I installed about eight 240v double plugs throughout boat.

Instal circuit breakers on the 240v switchboard.

Have a switch to select input to the 240v board from either shore power, diesel generator or inverter.

### **Inverter:**

Make sure it will charge shavers and toothbrush without damage to their charging units.

Mine had damaged several chargers before I realised what was wrong. It did not produce a compatible sine curve which blew the shaver and toothbrush chargers.

Sufficient output to run the microwave. Mine is too small and won't - I never thought of it.

### **Microwave:**

Can be a small unit but needs a rotating plate.

It is an alternative cooking unit when the gas stove/oven fails due to damage, lack of gas or high temperature in the boat when in the tropics. We use it often but because the inverter is too small to power it I need to start the diesel generator for 240v or to have 240v shore power.

### **Laundry:**

Small 240v electric washing machine. We have a semi-automatic, "Tefal" made in France, that works well but Margaret doesn't like it because it is a bit of a fiddle to set up in the cockpit (even though I do it for her). If you had space it would be better permanently set up in the "laundry". There are now other makes from China.

Spin Dryer 240v, also a Tefal. Wonderful on a boat; spins so fast the laundry comes out nearly dry enough to wear. It is used all the time, especially as wrist muscles become weaker. It is another good reason to have a 240v diesel generator.

Heated 240v Towel Rails: One in the bathroom and one fixed to the deckhead (ceiling) above the boat heater in the grand saloon. Desirable for airing and drying laundry, towels and tea towels and taking the chill off bathroom. Also helps to keep the whole boat slightly warm and dry which is helpful. I run the towel rails through the winter when there is frost about to prevent frost down below. Of course you do need shore 240v to do this.

### **Central Heating, either diesel or gas:**

For summer and winter if you sail in the south and everywhere in NZ and Australia in the winter.

Although my heating is run on lpg I think diesel might be better because there is plenty of it down there in the fuel tank.

The heater should be big enough to heat the whole boat.

### **240v Power Supply to Yacht: *Power is freedom:***

Because the circuit breaker of 240v plugs on the marina wharf are usually limited to about 2200w you really need two power cords coming in totaling 4400w to run say electric jug or toaster or microwave or 240v heater **and** the 240v hot water cylinder or a second electric heater. I run the second extension cord into the boat, straight to the jug. The marina staff

are not keen on the two power leads but often they do not notice. Or you could offer extra payment.

#### **Electric fan heater:**

Used when 240v shore power available in say a marina. Two 2000w heaters would be needed for a 45 footer.

#### **Exhaust Fan or Range Hood:**

An effective way of reducing cooking odors and condensation is to instal a 12v galley exhaust fan or range hood.

#### **Insulate Deckhead (ceiling) for Condensation:**

The worst condensation occurs in the deckhead under the lining. Throughout the boat I took down all the deckhead lining and glued on a double layer of 12mm non-inflamable insulating foam sheet under the rough deck head, cutting to fit all the rough texture. Then replaced the deckhead lining. Huge and daunting job.

#### **Condensation and Insulation of ship's side:**

Margaret wallpapered inside of the boat's side in the sleeping cabin with wetsuit material to insulate from the cold in the winter, heat in the tropics and to reduce condensation from cooking and heavy breathing. Especially necessary in the sleeping cabin where two people breathing produces lots of moisture and condensation in colder weather. Once in bed always sleep with the hatch slightly open to maintain the inside temperature close to the outside and reduce condensation.

There are other insulating materials such as Front Runner which is like carpet and used in buses, but I am sure lined wetsuit material is the best. Cover chainplates and bolts if they show inside.

#### **Catching the Drips:**

Here is another anti-condensation method used by a friend who lives winter and summer in his boat in Nelson marina. He rigs up a sheet hanging on hooks from the deckhead in his sleeping cabin. It has two effects:

a) Keeps the warm moist air from his breathing and body from reaching the deckhead where it would condense and drip.

b) The sheet catches the drips before they land on him.

Each morning he unhooks the sheet and hangs it out to dry.

He claims he can even heat his sleeping cabin and does not need to open the hatch on frosty nights. However good insulation could be a better idea.

#### **Carpet the Floors:**

Carpet is effective to help with the insulation. Cover all floor areas with quality carpet but cut into manageable pieces for ease of lifting, cleaning and access to the bilges. Hold in position with small squares of velcro glued to the floors and the carpet.

#### **Awning:**

An overall awning is needed in the tropics, including Australia.

I designed and had made an awning in three sections which covers from bow to mast, mast to wheelhouse and wheelhouse to near stern. Make it strong and rigid enough to stand 30kts wind when in harbour so you do not have to worry or go back to the boat to take it down in a blow. Up in the islands the wind blows 20kts to 25kts every afternoon. I borrowed the design and modified a good awning from a Canadian yacht who had modified a good design from Florida yacht. The cockpit part of my awning stays up, only

coming down about every three years for repairs. It lasted 15 years. If you are interested I can show you my awning and explain this well tested design. Don't trust a canvas worker to do the design work as I did. His design all had to be extensively modified. They must be closely supervised.

### **Toilet:**

Three years ago I installed a new hand pumped toilet. Not purchasing a unit incorporating a 12v electric pump was a mistake. Margaret and I are now 88 and 90 years old and find it requires too much strength to pump the flush salt water and the discharge through all the pipes of the LectraSan sewage treatment unit. However in 2017 I imported a replacement "turnkey" electric toilet to replace the commonly installed hand operated Jabsco manual toilet. Our new macerating 12v toilet has been a success.

### **LectraSan:**

With the introduction of the new sewage discharge regulations we installed an LectraSan salt water 12v electric sewage treatment plant which has been satisfactory. If planning to cruise USA waters check their regulations.

### **Shower Tray 12v Pump Out:**

I lead the shower tray pump discharge up to join the bathroom handbasin discharge immediately under the sink. The shower water is then discharged down the handbasin through hull fitting and there is no chance of it syphoning back.

### **Galley Sink:**

We have hot and cold pressure fresh water in the galley sink as well as a third tap which has pressure SALT water. It can also be hand pumped if the electric pump has failed or batteries are down. This is much used for rinsing and a good way to saving of fresh water. By altering the appropriate valves the galley sink hand pump can pump fresh water from the main fresh water tank. Fresh water is then accessible from the main tank in case of 12v pump failure or flat batteries.

### **Fresh Water:**

There are 400 litres in the tanks. We always carry another 50 litres reserve in two cans on deck so that if we use all the tank water or it is lost or contaminated we will always have that 50 litres to survive on. To survive you need to drink about one litre of water a day each so if you have lost all other water in the tanks those two cans will give two crew 25 days survival period. Water in your tanks can be lost if a leak occurs in the fresh water tank or the piping, and the freshwater starts to flow into the bilges. The automatic bilge pump would then start and keep pumping the fresh water in the bilges out to sea. If the engine is running you wouldn't hear the bilge pump and all your water has disappeared.

Usage per day for two aboard

Short rations - 15 litres per day ) long transocean passage making i.e NZ to Australia distance 1200nm in 12 days.

Medium rations - 35 litres per day ) coastel passage making.

No rationing - 45 litres per day ) with normal careful boating care

Avanti has a simple rain collection arrangement on deck for use when at anchor. Once the deck is washed clean the rain water is collected from the starboard forward quarter of the deck and runs into the tank filler tube on the side deck. Margaret usually pours two tablespoons of bleach into the tank to kill any critters. The slight chlorine smell and taste soon goes away.

**Water-makers:**

If voyages will take less than 20 days I do not think that water-makers are a great idea

Reason:

Normally cannot be used in harbour because if water is oily it clogs and ruins the filters.

The filters are expensive.

The units frequently break down.

They need a lot of maintenance.

Heavy drain on 12v battery power to operate.

The water-makers are expensive and take up a lot of room.

I suggest you talk to owners who have actually used them in anger.

The secret is knowing how to live on very little water, reuse some for rinsing clothes and have readily available pressure salt water for rinsing. On completing our 12 day voyage across the Tasman Sea in 1990 we still had half our water left.

**Measure Water Remaining in Tanks:**

- a) Be able to dip the tanks.
- b) Have an electrical gauges to measure the remaining water in the tank.
- c) Able to record the running time of the pressure water pump with an engine running timer to enable you to calculate how much water has been used and therefore what is remaining.

**Fuel Consumption:**

I think it is better to always carry enough diesel - full tanks and extra cans - to get there even if no wind, rather than installing a watermaker. When passage making you cannot muck about. Pick your weather window and go for it. If you dally on the way you will be clobbered by the next gale.

On transocean passages I carry enough fuel to get half way to the destination.

Crossing the Tasman Sea we had 200 litres in the fuel tank and five x 25 liter cans (125 litres) of diesel on deck and three cans (75 litres) stowed below, grand total of 400 liters which gave us a range of 800 nautical miles or 133 hours.

In calm conditions our fuel consumption is 2nm per litre, range = 800nm, or 3 liters per hour.

Distance Sydney to Nelson = 1200nm

In rough and/or windy conditions fuel consumption would be more.

In favourable sailing conditions fuel consumption would be less - 3nm per litre, or none at all because we would be making good time under sail only.

**Self Steering:**

Over a period of 52 years in the three different keelers I have had five different Autohelm models and one Haslar wind driven self steering.

Avanti now has an 12v Autohelm 6000 driving through a dedicated steering arm bolted to the rudder post. Also an Autohelm 4000 as a standby driving through the main steering wheel.

Self steering is like having two extra crew aboard who do not talk much or need to be watered or fed.

12v electric self steering uses little power, is the most reliable, accurate and easiest to operate. For long voyages photovoltaic cells are desirable if electric self steering is installed.

Wind driven self steering needs no power but sometimes produces unexpected outcomes but is good as another backup. Consider control of wind driven self steering by an Autohelm 1000 instead of a wind blade.

Carry a spare autohelm fitted and ready to operate. Remember they (and everything else) breaks down. If sailing shorthanded on a transocean voyage and all your self steering systems fail you are in the poo.

### **Anchors and Cables:**

Anchors should be suitable for the displacement of the yacht but of such size that you can handle them.

The main anchor rode should be all chain and about 80 to 100 meters long.

The second anchor rode - could be 15 meters of chain and 150 meters of rope.

The third anchor - I have an Admiralty pattern (fishermans anchor) lashed on deck. The chain, rope and shackles for the third rode are stowed below and assembled when needed.

Have the bitter end of all rodes able to be tailed with further lengths of rope and then be safely released for deep water anchoring.

### **Long Stern Line for Mediterranean Moor:**

In Stewart Island, Fiordland and Marlborough Sounds where the shoreline is deep it is often advantageous to lay an anchor out ahead and run a stern line to a tree from the stern. When bowsed in taught this configuration digs the anchor into the steeply sloping seabed ahead and draws the stern back close to the shore cliff behind out of the wind. The stern line should be a floating 10mm rope about 60m long stored on a reel mounted near the stern for easy deployment. When the anchor has been laid the stern line is taken ashore by the dinghyman, around a tree and back to the yacht, and tensioned. When departing taking the rope around a tree and back allows the stern line to be cast off and recovered without going ashore to untie it.

NB: Watch depth under rudder when close to the cliff at low water.

Avoid anchoring where the tide is running against the side of the keel.

### **Anchor Winch:**

Vital piece of equipment. Powered by 12v and operated by mechanical or hydraulic drive. Main control foot switch close to anchor winch.

Additional foot operated deck switch close to bow to improve visibility as the chain comes in and the mud needs to be washed down with the anchor wash-down hose. Install an accessible 12v power on/off switch for the wash down pump near the bow.

It is necessary to be able to recover a chain and rope rode using the anchor winch drum. When weighing anchor run the main engine at about 1200rpm so the alternator is producing power which will reduce the load on the batteries.

I think the anchor winch electrical load should come from the domestic batteries but with switchable backup from starter batter if needed.

Work out alternative method of weighing anchor if winch breaks down, using rope, chain-hook and sheet winches.

### **Subjects to be covered next Chapter:**

Navigation lights, electronics, electrics, radio transmitters, radio aerials, computers, radar, echo sounder, navigation.

Engine, pumps, alarms - (burglar, gas, fire and smoke, bilge, depth, off course, anchor).

Gas, cooking, storage of food.

Galley equipment.

Mainsail in-mast power furling, sails, mast and rigging.

Life jackets, safety equipment.  
Heavy weather protective clothing, onboard summer and winter clothing and footwear, bedding.  
Seasickness,  
Tools and tool boxes, spare parts, nutsboltsandscrews.  
Stickies, glues and gunks, paint and solvents, the fibreglass repair box.  
Dinghy and dinghy davits and sea stowage, outboard, petrol, wet suits, fishing.  
Health, medical locker, first aid.  
Entertainment, computers, TV, video, music  
Books and equipment instruction manuals.

### **Records**

I am sure you will enjoy your new yacht and all the work that you will take such a delight in doing. Write all your "PLANS" down in A5 spiral bound note book with plastic covers. Allocate another note book for your "JOB BOOK" and a third for your "DECK LOG" and a fourth for your "MASTER LOG".

### **The DECK LOG and the MASTER LOG**

In the DECK LOG write up abbreviated navigation details, social activities, people and boat names and what happens each day.

MASTER LOG is the written-up-in-full story of your adventures, social activities and disasters. From this, on your computer, you can write the edited version of which becomes the bases of the book you will hand down to your grand children or have published as a best seller.

Keep taking notes and writing otherwise the great adventure becomes a jumble in your head.

The Master Log is best written up, from your notes, a week or so after the events so they are in better focus.

There is heaps more in my head but I have probably bored you to tears already.

### **Yachties Money Jokes:**

- 1) Be aware - maintaining a proper yacht costs 10% of its purchase price per year.
- 2) If you want to know how much it will cost you cannot afford to go cruising.

There should be no hurry but when you have gained sufficient experience, all the work is done and you cast off from Dunedin to sail the coast and then the high seas, living aboard your yacht and your travels becomes a whole new and exciting period in your lives, never to be forgotten.

Best Regards  
Bill and Margaret McIndoe

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