

Flying the Volmer VJ-22 homebuilt amphibian

by Rob Germon

Back in 1968 euphoria broke out in Glendale California when one Volmer Jensen wheeled out of his workshop the first two-seat homebuilt amphibian of the age.

Hysteria echoed right around the homebuilt aircraft world. How heavy is it? they asked. What will it cost to build? Will it fly two people off the water?

To answer some of these questions, let's talk about how Volmer Jensen came to design a wooden two-seat homebuilt amphibian aircraft. Jensen had been in the backyard aviation business for a long time and in fact worked for several aircraft companies in the USA.

Jensen was a gliding person at heart but loved the water. He had built a three-seat pusher land aircraft a couple of years earlier and had hoped that Piper or someone may have been interested in putting it in production. However, that wasn't the case.

He turned his thoughts to a homebuilt amphibian after coming across a very old Italian wooden two-seat amphibian hull. He took it home, modelled up a new hull, hung a set of Aeronca Champ wings and tail feathers on it and installed an 85 hp Continental pusher engine, and the job was done.

His friend and buddy Irv Culver watched from the sideline. Culver was a unique engineering man in Lockheed's Kelly Johnson Skunk Works at the time. No doubt Culver would have answered a few questions and crunched a few sums for Jensen on what was to become the VJ-22 Volmer Sportsman homebuilt amphibian.

Soon word was flying right across the world and around 100 Volmer VJ-22s were built. Jensen re-engined his creation with a 100 hp Continental engine after reports started coming in that 85 hp just wasn't enough. The Canadians put 125 hp engines on Volmer's creation and some of them even turned the engine around to a tractor configuration.

Jensen flew into a rage about builders modifying his creation, and the idea of a tractor engine was sacrilege in his eyes.

But let's talk about ZK-CTY, the Volmer Sportsman I flew for several years and ended up owning for a while. ZK-CTY was 1070 lbs empty and had a 100 hp Continental engine (in fact it came with a Rolls-Royce silver engine sticker). The VJ-22 has a very roomy cockpit and excellent visibility. Noise level is not too bad, similar to a thousand bees flying in formation.

With the correct propeller the engine would generate 2750 rpm all day and all night. Revs never hurt an O-200. CTY had a set of Aeronca wings designed to carry the 1300 lbs all-up weight of an Aeronca Champ. The VJ-22 was designed to carry 1600lbs on the same wing! So they said.

This Volmer was painted yellow and it soon got the name the "Drunk Duck", not a very nice thing to say about a fine old wooden amphibian. The name stuck, however. This VJ-22 carried 77 litres of fuel and two 170 lb people at 85 mph.

It also carried in the payload a 30 lb sand bag which was essential when flown solo to bring the centre of gravity into the aft safe limits. The 30 lb sand bag I kept on losing at beaches as I used to sit on it and then leave it behind! The duck would also carry a cut lunch, life jackets and a lot of ancillary bits and pieces.

The O-200 engine had a modified oil tank so it would fit into the A frame engine mount, and the problem with that was the temperature was often too cold. However, trawl-



Checking fuel level.

ing on the water the oil temperature got too hot! This was a great problem as there were times when one couldn't get out of the water when it was too rough and so one would have to taxi a mile or so to find some smooth water.

As a matter of interest, I never flew the Duck in fresh water; it was always in the open sea and harbour areas.

The VJ-22 is a stick-and-rudder aeroplane, a sort of cross between an Auster and a Tiger Moth. Land takeoff is Auster stuff, very short, and the climb is average — but in fact I flew the VJ-22 to 10,000 feet for the CAA on auto fuel (mogas) tests. It was still trying to climb at that altitude.

Ailerons are typical Champ and the engine blows plenty of air over the tailplane in the wrong places. Pusher aircraft of course are a handful, but it seems the ultralight design people still haven't discovered that. Pusher aeroplanes always need another 5 knots on the clock on approach due to the fact there is no propeller blast over the leading edge of the wings.

On the Duck one had to lockwire everything down on the engine. That's right, rocker cover screws, exhaust system and you had to have the propeller bolted on in such a way that the exhaust pulses fire not on the blade but just after it passes by.

Then of course you have to make sure you don't throw your empty Coke can out the window while cruising along as that will go through the prop and what a spectacular event that can be. You also need to make sure mother's shades are on her head properly and her bikini is well strapped on and everything in the cockpit is tied down just in case.

The Duck has retractable landing gear, mains and tail-



wheel. Biggles would be thrilled with the design. There is a centre lever between the seats that locks the gear down and it also raises it when required and locks it on top of the canopy frame. The weight of the gear is offset by bungees so you don't break your yodel when retracting the gear.

I found a karate shout did the trick. New passengers get a bit of a fright when you leave the ground, unlock the gear and then shout, "HONG YUNG KACHUNGA!" and the strength comes to haul that big lever with those 600x6 tyres up to the locked position.

Then on the back of the cabin bulkhead there are two levers that raise and lower the tail wheel and water rudder correctly. It's all great Navy stuff and the design was probable used on Noah's ark.

If you yaw the VJ-22 in the climb too much the engine will splutter and lose power because the carburettor air intake doesn't stick out far enough past the front of the engine cowl and so the air just blows around the cowl profile. So there is always a good reason to keep the ball in the centre at all times.

But how do you do that when the ball in the turn coordinator won't stay in the centre anyway due to the fact the fin area down the back is too small? Well, it's easy. The radio aerial on the front of the nose is a perfect place to tie a piece of wool and there you have it. Just keep the wool pointing towards the centre of the windscreen and the problem is solved — although there are times when the same piece of wool does point forward in some flight modes!

One of the most dangerous situations you can get yourself into is landing on glassy water. I was glad one day when I ran into a pilot who drove a Grumman Goose and he came for a flight with me and showed me just how quickly you can write yourself off in the glassy water situation. It's so easy.

The trick is to find some rippled water. But if you have to land on glassy water, shoot an approach at a very low rate of decent, like 100 ft per minute and the nose just below the horizon. This is hard to do in the VJ-22 as it glides like a house brick. So plenty of power is needed and plenty of room. Had I flared at the point I thought was correct I would have been 10 feet below the surface of the water.

It takes lots of practice and you need dual time for this for quite a while. Otherwise you will wind up in Davy Jones's locker.

Water flying doubles your fun and safety. It also offers you a chance to explore many harbours areas and estuaries that one could never get into and see otherwise. Learn-

ing to read water and what it can do to you is another story.

My water flying training was pretty limited when I started to fly the Duck. I had completed a couple of check circuits and that was about it. I did get some Biggles books out of the library on water flying and picked up a few things.

So all my takeoffs were in a straight line until one day I hit a beer bottle that appeared in the cabin right under the passenger's seat. I started taking on water like you wouldn't believe. A flashback to another Grumman Goose pilot: if you put a hole in the hull, get the stick right forward and full power and bounce your way out — and it worked.

I then had around 12 gallons of water down the back. I mean right down the back! So the CG was well aft. I had full power and around 60 knots, full forward stick and an altitude of 50 feet. Pretty good, really. Beats sinking in the open sea.

I collected my thoughts and slowly did a very shallow turn around to see how far the airfield was away. It was about three miles. The problem was the airfield was 120 feet above sea level and I was at 50! Ever so slowly I got the VJ-22 to climb a bit, and a bit more, until in the end after 10 minutes I had enough height to just get onto the airfield at full power.

I was a bit uneasy about lowering the gear as that would drive the CG even further aft, but I had to do it and with that I did my first full power landing in the Duck!

We soon realised that Volmer's VJ-22 and the ¼ inch plywood with 6 oz glass cloth on the bottom was complete useless in deflecting beer bottles that nasty people leave in the water, not to mention the bits of 4x2.

So we re-skinned the front step with light Kevlar and that worked like a treat.

The problem was where the loads were now going to be transferred. We found they were transferred right into the wing pickup bolts — all four of them. So it was a case of installing close-tolerance helicopter bolts and that did the trick. However, they needed changing every 100 hours.

Not so long after this event, I took a Canadian bush pilot for a flight in the trusty Volmer. He was impressed but he said to me, "The trouble with you British is you do everything in a straight line."

"What do you mean?"

"Haven't you learned how to do a circular takeoff on the water?"

I said, "Well no, I always do a straight takeoff and make sure the nose is pointing towards Buckingham Palace for good luck!"

Anyway, the short of it was Mal showed me how to shoot good circular takeoffs. That way one can see the debris that you are going to run into as the water swirl sweeps the debris into the middle of the circle.

Two: you can use a much smaller space to get out of the water; and three: you can roll the aeroplane up on half the hull to reduce drag and thus pick up speed. Cross-wind takeoffs are much more manageable.

With this knowledge I was becoming an expert. No more thundering out of a bay in smooth water only to strike a 20-inch chop when one is almost on the step!

Perhaps the most treacherous part of water flying is reading the water. At 1000 feet in general it's all Disneyland down there. Then when you get down to 500 feet it's often a cross between Disneyland and Alcatraz.

The short of it is that if the chop is 12 inches high and a short fetch, forget it, because if you get into that sort of water it's dangerous. The experience of landing in a 12-inch chop is similar to driving down a corrugated dirt road

on a dark night in a Ford Prefect with the lights out.

So one needs to look for bays and estuaries with smoother water and less chop and long fetch. The problem with bays is that usually you have to approach over a built-up area, and then you have little old ladies ringing the police saying there is a yellow aeroplane crashed into the water! I have had that happen three times.


The big plus about owning the VJ-22 is it doubles your aviation flying fun. The freedom is fantastic.

But a plus for me is my wife loves the trusty Volmer! I never dare ask why, as she sure doesn't like Piper Super Cubs. So we really enjoy an afternoon snooping around the bays and low flying right on the water. It's all legal as you are checking a landing spot. The other excuse is you could have carburettor icing.

One great feature about the Volmer is it's a great speed-boat. You can beat anything on the water, even these 1000 hp jobs. You can do them like a dinner.

Waving to yacht crews is fun, as is spotting nudists and people in secluded places doing things they shouldn't be doing. Of course you don't take your wife on those sorts of sorties!

Coming up on an isolated beach can be embarrassing. At one secluded beach with my good wife I had just dropped the gear to taxi up onto the beach when three chaps in the nick felt they should run out and give us a hand. My wife didn't know where to look!

A final thought: if you plan to build a Volmer Sportsman, do put a new Rotax 914 up top. This would cut the weight down by 110 lbs and reduce the height of the engine pylon, and it would also allow you to use a three-blade propeller. You would then need less fuel and have a bigger payload and plenty of grunt up top. 



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